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Contents

NOTICES.—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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To Stop Dumping

MR. RUNCIMAN has taken prompt steps to deal with the "dumping" peril. It is proposed to confer emergency powers on the Board of Trade authorising them to issue orders imposing duties up to 100 per cent. of their value on imported articles, wholly or mainly manufactured, coming under Class 3 in the returns of the Department. These include coke and manufactured fuel, chemicals and drugs, etc., oils, fats, and resins, leather and manufactures thereof.

Month by month our readers are kept informed of the volume of chemical exports and imports. These have one feature of which the industry can still be proud. It is the great preponderance of exports over imports. The proportion, however, has been less favourable in recent returns, and there has been a notable increase in imports, though perhaps, hardly enough to justify the term "dumping." The powers now granted to the Board of Trade will enable that department to apply the remedy wherever the legitimate business of importing is found to be pressed beyond its proper limits.

The limitation of such imports should have a decidedly good effect on British chemical trade. For years past we have been changing, chemically, from a merchanting into a manufacturing country, and we are now in a position to supply a vastly greater variety of products than formerly. There are, of course, many chemicals that we still have to import for purposes of trade. Where these are not and cannot be produced in this country, their importation is a simple necessity; but where the new powers of the Board of Trade will come into force with real effect is in relation to chemicals that are being manufactured here. The larger purchase by merchanting firms as well as by acutal users, of home-produced chemicals obviously helps this country in the matter of employment; it also helps the national trade position by reducing the amount of money that has to go out of the country for foreign purchases.

To what extent "dumping" has taken place in chemical products it is difficult to say at present. What is clear is that chemical imports have certainly increased, partly due, perhaps, to the favourable exchange rates and partly to the desire of foreign firms to get their goods through before the threatened tariff comes into operation. The Board of Trade, which has had a thorough experience in this field, will have no difficulty in judging between "dumping" and genuine imports, and it will need no official urging to put into effect any provisions for the benefit of home industries.

The Dyestuffs Act to Continue

AS we anticipated in some recent notes on the future of the Dyestuffs Act, the measure is to be continued for another year, being included in the Expiring Laws Bill. From the point of view of the users, even of those who favoured the discontinuance of the Act, this will be distinctly preferred to the imposition of tariffs on imported dyestuffs. The protection that the Dyestuffs Act gives to the industry is small but valuable, and it gives it, without taxing the user, by merely excluding foreign products when corresponding products of British origin are available at a reasonable price. It was expected, of course, that so good a business man as Mr. Runciman would need little persuasion to see the need for its continuance and that expectation has been speedily verified. This is one matter in which business men find it difficult to forgive the almost callous indifference to every kind of representation—from scientists, industrialists, and members of the colour industry itself—exhibited by members of the late Government. They have, however, met with their deserved fate, and it is satisfactory to think that dyestuffs and every other interest are now in more responsible hands.

Future of the Plant Exhibition

THE questionnaire issued by the British Chemical Plant Manufacturers' Association has elicited from the exhibitors at this year's exhibition some really useful information as to future organisation of the fifty-four firms who were asked for their opinions; fifteen did not reply. This, in such matters, is not an exceptionally high proportion; nor does it indicate indifference. The probable reason, as we have often found, is sheer disinclination to formulate definite opinions. On the other hand there is the positive testimony of 28 firms that they are satisfied with the results.

A decided majority of the firms favour three years as the interval between such exhibitions. It secures continuity, while avoiding too great a strain on exhibitors, and allowing them reasonable breathing time. The two exhibitions so far organised have attracted such extremely favourable opinions that the possibility of non-continuance may be safely excluded, and we should say that, if the next exhibition is fixed for 1934, it will evoke no less a response than this year's appeal. Many interesting suggestions have been made for future exhibitions. One of these is the award of medals and diplomas. This seems well worth consideration. A firm that took pains to arrange a particularly good exhibit would have a pleasant memento of its success, and such awards would probably stimulate exhibitors and so result in improved exhibits. Admittedly the hall in which the first two exhibitions have been held is not entirely suitable, and steps are already being taken to find a more suitable one—" if such exists," the official report guardedly adds.

American Potash

FROM time to time reports are issued respecting the development of a home potash industry in the United States. The latest is one of the rosiest in the series. Within about a month, it is stated, commercial potash will be produced from the refinery of the National Potash Co., working in the Eddy County potash area. A Californian company is also in the field. In some quarters, it is guardedly stated, the end of American dependence on foreign potash is foreseen in these developments, but we fancy a good many years must elapse before the United States will cease to be a market for German and French potash. At the same time the trial searches for potash beds in the United States, which are being steadily prosecuted, may presently disclose supplies that may be treated seriously as sources for home purposes. At present the home output is not sufficient to have much effect on the imports of potash.

Overseas Chemical Trade

THE Board of Trade returns for overseas trade during October show a noticeable increase in chemical imports in comparison with the figures for October, 1930. The amounts involved are £1,590,763 and £1,253,822 respectively, showing an increase of £336,941, or 26.8 per cent. Chemical exports at £1,456,328, on the other hand, have remained at a more or less constant level during September and October of this year, being only about 24.8 per cent. below those for the corresponding months of last year. Re-exports during October amounted to £63,600, only £1,015 lower than for October, 1930.

Death of Professor Reid

THE report of the death of Professor W. F. Reid will be read with great sympathy throughout the chemical industry. Professor Reid always seemed a model of order and method, and there was about his appearance a touch of immaculateness—with his silvery hair and his quaintly peaked and waxed moustache. Yet this distinguished scientist, at the age of 81, was found in his own house at Addlestone in a state of complete neglect and collapse. His own love of secrecy and his hatred of dependence on others probably account for the fact that so little was known of him during these lonely days in his old home. Professor Reid was a past President of the Society of Chemical Industry.

Books Received

COMPANY ACCOUNTS AND BALANCE SHEETS. By Kenneth and Michael Moore. London: Jordan and Sons, Ltd. Pp. 142. 5s.

CONVERTING A BUSINESS INTO A PRIVATE COMPANY. By Herbert W. Jordan. London: Jordan and Sons, Ltd. Pp. 50. 1s. 6d.

ECONOMIC CONDITIONS IN PALESTINE, July 1931. Report by K. W. Stead. London: H.M. Stationery Office. Pp. 50. 1s. 6d.

The Calendar

November 21	Oil and Colour Chemists' Association (Manchester Section): Annual Dinner and Dance 7 p.m.	" Manchester, Ltd."
23	Institute of Chemistry (Leeds Section): Annual Meeting. Discussion on Food and Drugs Acts, 1928, opened by Mr. A. R. Tankard. 7.15 p.m.	Gt. Northern Hotel, Leeds.
24	Hull Chemical and Engineering Society: " Application of the Modern Electronic Theory to Aromatic Chemistry." H. H. Hodgson. 7.45 p.m.	Grey Street, Park Street, Hull.
24	Diesel Engine Users' Association: " Diesel Engines for Overseas Work." H. V. Stead.	Caxton Hall, London.
26	Institution of Chemical Engineers. President's Reception.	New Princes' Galleries, London.
26	Institute of Metals (Birmingham Section): " The Casting of Tough-Pitch Copper." W. F. Brazener. 7 p.m.	Chamber of Commerce, Birmingham
26	Institute of Chemistry (Belfast Section): Annual Dinner.	Belfast
26	University of London: Opening of New Building for the Ramsay Memorial Laboratory of Chemical Engineering by H.R.H. Prince George. 3 p.m.	University College, London.
26	Exhibition of Modern Technical and Artistic Glasses: " The Supreme Glass: Fused Silicia." R. W. Clark. 4.45 p.m.	Science Museum, London.
26-27	Institute of Chemistry, Society of Chemical Industry (Edinburgh Sections): Scientific Exhibition. 5.30 to 9 p.m.	16, Royal Terrace, Edinburgh.
27	Royal Institution: " The Work of Sir Charles Parsons." Sir Alfred Ewing. 9 p.m.	21, Albemarle St., London.
27	Andersonian Chemical Society: " Ionisation Theories: Old and New." Professor J. Kendall. 3.15 p.m.	Royal Technical College, Glasgow.
28	British Association of Chemists: Annual Meeting, 3 p.m. Annual Dinner, 7 p.m.	Palace Hotel, London.

Alkali Cyanides in Industry

Production and Utilisation

A complete review of the present status of cyanides industry was presented at a symposium arranged by the American Electrochemical Society, at their meeting at Salt Lake City, in September. The following extracts relate to the use of cyanides in ore flotation, case-hardening, electro-plating and fumigation. The extraction of gold and silver by the cyanide process, being so well known and of limited interest in England, is not dealt with in detail.

WHEN the MacArthur-Forrest process for the extraction of gold and silver from their ores was first introduced, the cyanide which it consumed was prepared from potassium or sodium cyanide and the conversion became the subject of intensive study. The ferrocyanides used as raw materials were derived exclusively from the purification of illuminating gas. With the introduction of the Castner process for the production of sodium cyanide from metallic sodium, anhydrous ammonia and carbon, the ferrocyanide process became less profitable although it continued to operate in a small way for some time. The relative position of the two products was reversed by the introduction of cyanamide process cyanide. This could be profitably converted to ferrocyanide and to-day the largest manufacturer of ferrocyanides in the world employs this process exclusively, the excess of lime in the cyanamide process cyanide supplying the alkalinity necessary for the reaction with ferrous sulphate.

A large amount of cyanide is manufactured in the form of 96-98 per cent. sodium cyanide by the Castner, or Castner Roessler process. Fused cyanide is formed, with the intermediate production of sodium amide and cyanamide, according to the equations:

$$2\,Na + 2NH_3 = 2NaNH_2 + H_2$$
$$2NaNH_2 + C = Na_2CN_2 + 2H_2$$
$$C + Na_2CN_2 = 2NaCN$$

the product being cast into various shapes including one-half and one-ounce "eggs," or sprayed into a finely-granulated form.

The material produced at Niagara Falls, Ontario, is made by fusing in continuous electric furnaces a mixture of calcium cyanamide, calcium carbide or barbon, and sodium chloride:

$$CaCN_2 + C + 2NaCl = Ca(CN)_2 + 2NaCl.$$

The product is tapped at regular intervals into a sump outside the furnace, the equilibrium being "frozen" at the high equilibrium temperature point. The process was first described in a paper read at a meeting of the Canadian Institute of Mining and Metallurgy at Toronto, in 1920, by Dr. W. S. Landis. The development reviewed then showed that commercial manufacture was begun in 1917, the product at the end of the year having an average cyanide content of 22 per cent. average NaCN equivalent During 1918, the batch furnace used in the early work was abandoned in favour of a continuously operating furnace, and by the end of 1918 the process had been improved to permit regular production of a product containing 30 per cent. NaCN equivalent. The year 1919 saw the introduction of a number of improvements which greatly increased the average grade of product, so that by the close of that year a material containing 46 per cent. NaCN equivalent was in regular production.

Use as Ore Flotation Reagent

Cyanide has been used in flotation concentration of ores for about ten years as a depressor, that is, as a substance having the property of rendering non-floatable, or difficulty-floatable, minerals which would otherwise be floatable. Specifically, it is used in the case of complex lead-zinc-iron ores to prevent the flotation of zinc and iron while the lead concentrate is being floated, the zinc being recovered after activation, the iron remaining depressed. A depressor is also used in the case of copper ores to prevent the flotation of iron minerals during the recovery of the copper, thus permitting the production of a higher grade copper concentrate. Cyanide for this purpose was first used commercially by the Consolidated Mining and Smelting Co. at Trail, British Columbia. Different flotation mills employ the cyanide in different ways. Sometimes cyanide alone is relied upon. In cases where it is desired to separate zinc from lead by inhibiting the flotation of zinc, best results are secured by the use of cyanide in conjunction with a zinc salt. When pyrite depression is desired, the cyanide is generally used alone. Cyanide, however, is more effective as a pyrite depressor in the presence of iron salts, just as it is more effective for zinc depression in conjunction with zinc salts.

Fused Cyanide for Case Hardening

The case hardening or carburising of ferrous materials, by immersion in fused alkali cyanide, or mixtures of cyanide with carbonate and chloride, depends on the readiness with which the carbon and nitrogen are transferred from the cyanide to the iron, while the latter is at the same time protected from oxidation. Practically all the sodium cyanide used in ferrous metallurgy is employed as a molten bath, the steel being immersed therein. Definite case depths are now specified, and this demands well-defined time of immersion at definite temperatures in baths of definite cyanide concentrations. Due to bath decomposition and to the serious objection to the obnoxious fumes which arise when the bath is heated much above 1,580° F., the majority cyanide operations are carried on at a temperature not exceeding about 1,500° F. Exceptions are made, depending on the character and analysis of the steel being treated and the nature of the case desired. The more intricate the shape of a piece being treated, the lower the temperature of the bath; the lower the carbon content of the original steel, the higher the temperature of the bath. The desired temperature is that just above the upper critical temperature of the core. Molten sodium cyanide, however, has both a carburising and nitriding effect upon steel. The nitriding function decreases and the carburising effect increases until, at about 1,550° F., the nitriding function progresses rapidly with further increase in temperature.

Pure fused sodium cyanide (96 to 98 per cent. NaCN), at any temperature, has a higher decomposition rate when used alone than when in presence of other fused salts. Accordingly sodium chloride and sodium carbonate, either alone or together, are the most common additions. Both of these salts act as fixatives of cyanogen, and in the quantities used, both raise the melting point of the bath. The most common practice is to start off a bath with a mixture containing 30 per cent. NaCN. This has a melting point of 1,157° F. It is a mixture of approximately 30 per cent. NaCN, and the balance equal proportions of NaCl and Na_2CO_3. When this mixture is held in an open pot at a temperature of 1,382° F., for thirty-seven hours, its cyanide concentration drops to 15 per cent., while at a temperature of 1,562° F., for the same length of time, its concentration drops to 7 per cent., whereas when sodium cyanide (melting point 1,040° F.) is fused in an open pot and maintained at 1,382° F. for forty hours, the sodium cyanide concentration drops from 97.5 per cent. to 49 per cent.

The "inerts," NaCl and Na_2CO_3, while tending to stabilise the bath, do not detract from the efficiency of the bath as a case-carburising medium. The 30 per cent. bath is operated for one day or more, the bath level being maintained constant by replacing the "dragout" with the fresh 30 per cent. mixture and the bath analysed hourly for cyanide concentration. When this value is known for a sufficiently long period to establish accuracy, calculation can be made of the amount of the 96 to 98 per cent. sodium cyanide to be added hourly to maintain the bath concentration at 25 per cent. NaCN, which is the acceptable figure for all production cyaniding operations at the prevailing temperature of the test run. Carburisation by means of molten cyanide baths has therefore reached a state of precision far in excess of that obtained by the older method with solid packs, owing to better temperature control and more complete knowledge of the strength of the carburising material at the moment the work is being processed.

Electroplating Baths

At the present time, cyanide baths are used for electroplating with brass, cadmium, copper, gold, gold alloys, silver, zinc, zinc-cadmium and zinc-mercury. Non-cyanide baths are used for electroplating with chromium, copper, iron, lead, nickel, palladium, platinum, rhodium, tin and zinc. Work has also been carried out which shows that a cyanide zinc bath may be readily used for electroplating directly on aluminium. It is, however, necessary to modify the usual type of alkaline solution by substituting ammonium hydroxide for sodium hydroxide to avoid attack on the aluminium, and an addition agent, such as peptone for continuous and gelatin for intermittent plant, is needed for best results.

Cyanide baths are advantageous, more on account of the type of deposit which they yield than because of the high solubility of the metal compounds in them. Thus electrodeposits are made in electro-winning or electro-refining from acid baths of cadmium, gold and silver, but these are too coarse grained and rough to be suited for plating purposes. The double cyanides of the metals are not only very soluble but are very slightly ionised, and because of this fact three plating factors are decidedly improved, namely: (1) fineness and smoothness of deposit, (2) throwing power of solution, (3) possibility of depositing alloys. There appears to be a field for research along three lines, namely, improved methods of analysis for plating solutions, increased rate of deposition, and the development of newer and better alloy deposits. Potassium cyanide is preferred and used almost exclusively in England because in the case of silver the structure of the silver deposit is better, a higher current density without burning is possible, and the throwing power is higher. In the case of gilding solutions, KCN again has advantages over NaCN, as it allows of a greater margin in the plating range without spoiling the colour.

The use of cyanide in solutions for the cleaning and dipping of metals may properly be mentioned under electroplating, as, when so used, the operation is generally for the purpose of preparing the metal for subsequent plating and the compounds formed are similar to those used in electroplating baths.

Advantages as Fumigant

The property of calcium cyanide of liberating its HCN when exposed to moist air has become the basis of a very considerable application for the crude calcium cyanide produced by the cyanamide process. When solid sodium cyanide is exposed to air, only a slight evolution of hydrocyanic acid occurs. This is principally due to reaction with carbon dioxide in the air. Although adsorption of moisture from the air takes place on the surface of the cyanide, the strong solution of sodium cyanide thus formed is stable and little or no hydrocyanic acid is liberated after the carbon dioxide of the air has been consumed. In other words, hydrolysis of the cyanide and liberation of hydrocyanic acid according to the equation

$$NaCN + H_2O = HCN + NaOH$$

can take place only to a limited extent before it is stopped by the accumulation of alkali in the solution. The situation is very different when calcium cyanide is exposed to moist air. Not only does the carbon dioxide of the air liberate HCN, but the moisture of the air does so as well, and, since the average amount of moisture in the air is greatly in excess of the amount of carbon dioxide present, much higher concentrations of gaseous HCN are obtained from calcium cyanide than from sodium cyanide. The explanation is that in the reaction

$$Ca(CN)_2 + 2H_2O = HCN + Ca(OH)_2$$

calcium hydroxide is insoluble in the strong solution of calcium cyanide; the reaction can therefore proceed to completion.

Provided the relative humidity of the air to which the material is exposed does not fall below 35 per cent., the rate of evolution of the gas is practically independent of the relative humidity. The uses to which this material may be put may be roughly divided into four groups: fumigation of enclosed spaces, destruction of burrowing animals, treatment of subterranean insects and worms, and open air dusting.

A Bookman's Column

THE papers collected together in combined volumes 11 and 12 of the *Proceedings of the Chemical Engineering Group*, which has only recently been published, cover the activities of the group for 1929 and 1930. As on previous occasions they have a wide range of subjects and are highly informative. The principal papers given are:—"The Relative Safeties of Mild and High-Tensile Alloyed Steels under Alternating and Pulsating Stresses," by Professor B. P. Haigh; "The Role of Surface Energy in Chemical Engineering," by Professor W. E. Gibbs; "The Design and Operation of Gas-Heated Furnaces," by C. M. Walter; "Rationalisation—Its Meaning and Application, with special reference to the Chemical Industry," by J. Davidson Pratt; "The Treatment of Flotation Concentrates preparatory to Zinc Smelting," by S. Robson; "Welding in Chemical Works," by J. R. Bover; "Electric Furnaces for Heat Treatment," by A. G. Lobley; "The Insulation of Heated and Cooled Surfaces," by J. S. F. Gard; "Asphalt as a Chemical Engineering Material," by Alan W. Attwooll and Donald McDonald; "Thixotropy as a Means of Structural Research on Colloids," by Dr. E. Hauser; "Caustic Embrittlement," by W. S. Coates; and "Sodium Aluminate in Modern Water Treatment," by R. B. Beal and S. Stevens. In addition there are reports of the discussions on "How can the Chemical Engineering Group best assist in the Development of the Science and Practice of Chemical Engineering" and "International Abstracting."

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VOLUME 8 of the *Transactions of the Institution of Chemical Engineers*, like its predecessors, contains a considerable amount of useful chemical engineering data disseminated throughout a series of very interesting papers, a large number of which deal with the subject of industrial wastes. These particular papers, it will be recalled, were read at a conference of the Institution in December, 1930. As printed in the present volume they comprise "Industrial Wastes," by John B. C. Kershaw; "The Treatment of Suint Liquors from Wool Scouring," by A. T. King; "The Treatment and Disposal of Wool Washing Effluent," by Basil A. Smith; "Whitewater in Paper and Pulp Mills," by Robert J. Marx; "The Distillation of Wood Waste and Utilisation of the Products," by M. Schofield; "The Utilisation of Industrial By-Products, with particular reference to the Pulp Industry of the United States," by R. W. Griffith; "The Problem of Tannery Waste," by D. Jordan Lloyd; "The Use of Wood Waste for Heating and Generation of Power," by Oswald Wans; "The Utilisation of Waste Rubber," by E. B. Busenburg; and "The Recovery of Metals from Waste Materials," by the late Professor J. W. Hinchley. Other papers included in this present volume are: "The Role of Science in Industry," the Presidential Address by J. Arthur Reavell; "Films and Fibres derived from Cellulose," by Dr. Herbert Levinstein; "The Formation and Growth of Crystals," by Professor W. E. Gibbs; "Pulverised Fuel," by J. T. Dunn and Burrows Moore; "High Pressure Reactions," by Professor W. A. Bone; and a notable contribution on the high pressure equipment of the Chemical Research Laboratory, Teddington, by H. Tongue.

Tallow as a Rust-Protecting Medium for Machinery

RAILWAY engines have been given a new lease of life by a process of tallowing. When dozens of locomotives have stood for months in and around sheds they present in time a sad spectacle of waste which only days of scraping, oiling and painting can save from abject ruin. "All companies," a railway official informs us, "have now adopted what is known as the tallowing-down process of preservation." Immediately an engine comes into an idle-shed it is smeared with tallow. This experiment has proved that an engine may lie for months and can then be put into practical use within a few hours, without rust or deterioration having taken place.

Exemptions from Key Industry Duty

THE Treasury have made an Order under Section 10 (5) of the Finance Act, 1926, exempting dimethyl sulphate and ethyl abietate from Key Industry duty from November 17, 1931 to December 31, 1932, and continuing the exemption from duty till December 31, 1932, of the chemical products referred to in THE CHEMICAL AGE, September 19, page 260.

Cleansing Agents and Water Treatment

A Survey of the Market

Newer developments which are forcing keener study of the needs for and the effects of chemical cleaning agents and methods, are outlined in a recent issue of "Commerce Reports," which is published by the United States Department of Commerce.

THE rapid growth of the world's textile industry, with the keener competition resulting from a uniformly higher quality of products; the spread of dry-cleaning, dyeing, and power-laundry service, as well as the use of mechanical household washing machines, are producing a cumulative effect in commercial trade circles. As these services penetrate the commercial structure of foreign countries, laundries, dry-cleaning plants, textile-processing mills, municipal water systems, and the like are established, ultimately demanding the importation of chemical supplies, such as chlorine, alum, bleaches, solvents, ammonia, caustic soda and caustic potash.

Dry-Cleaning Soaps

The dry-cleaning soaps, also known as "benzine soaps," which dissolve in cleaners' solvents, are usually made from oleic acid and caustic potash or soda, or a mixture of the two. Ammonia is also used in making dry-cleaning soaps. Triethanolamine is a recently developed American product, capable of forming soaps soluble both in water and in dry-cleaning solvents and of emulsifying mineral oils. These properties and its suitability as a reagent for various industrial purposes give it a rather wide potential market. Sodium silicate is used to sustain the detergent action or properties of soap solutions; alkaline solutions and resin soaps to promote free rinsing; and alkaline cleaners with soap solutions to provide a colloidal action. Soap-free alkaline cleaners, containing finely divided material such as silica and alumina, may exert a scouring action or imitate the colloidal effect of the soap. Coming within the latter category should be included products called colloidal cleaning powders, which are composed of causticised starch or cellulose matter; or certain colloidal clays mixed with such substances as soda ash, trisodium phosphate, washing soda, borax and soap. Certain silicates of soda and sodium aluminum silicate may be used alone as colloidal cleaners.

In the United States one of the most recent developments has been the introduction of a special petroleum distillate—a dry-cleaning solvent which reduces the fire hazard and at the same time is a solvent free from the ingredients which formerly were responsible for the objectionable odours remaining in garments after being dry-cleaned. Approximately 30,000,000 gallons of this distillate, known as "Stoddard Solvent," are used annually by the dry-cleaning industry, of which a substantial part is recovered and reused. Recent developments of dry-cleaning equipment for home and industrial purposes, designed for use with low fire-hazard solvents, such as those mentioned, and carbon tetrachloride and trichloroethylene and the like, promise greater economies for commercial dry cleaning and expansion of consumer use of this important service.

The economic advantages of recovering solvents, both in the dry-cleaning and chemical industries, have increased the outlets for absorbent materials such as powdered activated charcoal, silica-gel, silica, and diatomaceous earth, in addition to filtering materials, for removal of odors and colours not removed by distillation.

Laundry Chemicals

The laundry chemicals used are bleaching agents (chlorine, chlorinated lime and soda, peroxide, perborates, permanganate, ozone, sodium bisulphite, and oxalic acid) and "sours" (acetic acid, sodium bisulphite, oxalic acid, sodium bifluoride, and sodium silico-fluoride). Sodium bicarbonate and calcium chloride are used in rinsing clothes, to obviate damage from residual chemical sours or "damage" from fumes in the atmosphere. In addition, there are blueings, including indigo, soluble Prussian blue, and ultramarine and blue aniline dyes.

Boiler Compounds and Water Softeners

Hard water containing dissolved mineral salts causes great private and industrial inconvenience, soap losses, and fuel waste. The expense and inconvenience of cleaning clogged drain pipes may be reduced by the use of drain-pipe cleaners, which may be composed of caustic potash or alkali and aluminium turnings. With waters in some regions one-half to two-thirds of the soap used is wasted, because it is over and above the quantity required to do the cleaning itself, and could largely be saved by chemical pre-treatment of water. Unofficial estimates for the United States place the quantity of alumina sulphate used annually for water treatment at 200,000 tons and soda ash in excess of 100,000 tons; statistics are not available for Great Britain. Other water treatment chemicals are lime-barium carbonate, sodium and barium aluminates, sodium aluminum silicate (zeolite), ferric alumina, sulphur dioxide, ammonia, copper sulphate, chlorine, and salt. Considerable quantities of these products are used for both household and industrial water softening.

Unnecessary waste of fuel may result from deposits in boilers of lime and magnesium compounds which occur in hard waters. Investigations by the Bureau of Mines, recorded in *Boiler Water Treatment Technical Paper No.* 218, showed losses of efficiency due to boiler scale varying from one-fiftieth to one-ninth of an inch in thickness, range from 9 to 16 per cent. According to estimates from this study, probably 15,000,000 tons or more of coal annually could be saved by elimination of hard water for locomotive boilers alone. For example, one of the large railroads of the country, utilising soft water, was reported to be saving at least $75,000 annually. A steel company, with an annual output of 50,000 tons, reported the saving of 200 lb. of coal per ton of steel.

Removal of Dissolved Oxygen

In addition to the removal of scale-forming solids, it is of the greatest importance to remove corroding ingredients in water, especially oxygen. Boiler and pipe deterioration due to dissolved oxygen, carbon dioxide, common salt, and magnesium chloride in the water supplies are prevented or reduced in various ways, including the following: Gases are removed by chemical reagents or by physical deäeration; protective films may be formed inside pipes by use of sodium silicate; and alkalies are used to counteract acid. Few industries have so quickly and widely recognised the necessity of good water as the textile industry. Its leaders long have practiced the removal from their water supplies of colouring matter, suspended solids, and dissolved minerals, and employ various chemicals appropriate for absorbents, sedimentation, softening, and the like, with the necessary chemical engineering supervision. This industry, moreover, is still actively investigating the cleansing and related applications of chemicals and allied materials for scouring, degumming, boiling off, bleaching and dyeing.

Iron chloride and sodium chlorate, are assuming new industrial importance in sewage filtration and clarification. Compressed air and chemical cleaners are now in common use in cleaning building exteriors. The metal cleaning and electroplating industries are very important users of chemical cleansers, such as mineral acids, petroleum solvents, and chlorinated hydrocarbon solvents; emulsifiers or wetting agents, such as sodium metasilicate and trisodium phosphate; foaming agents; scum promoters such as ricinoleic acid, and casein; and acid-alkali balancers, including caustic soda, soda ash, silicate and phosphate of soda and borax.

Phenol to be Manufactured in Canada

The Dominion Tar and Chemical Co., Ltd., has just erected at Toronto a plant for the manufacture of phenol and allied tar products. The plant and equipment is stated to have cost, approximately, $250,000, and, in addition to phenol will turn out cresol and xylenol, additional products which have hitherto been imported. The plant is an important addition to the Canadian chemical industry and in manufacturing phenol is producing a product used especially in making resins to form the base of bakelite, which is widely used as an electrical insulator and for other purposes. Phenol also finds many other uses in industry, silk manufacturing, oil refining and flotation processes in the mining industry being mentioned in this connection.

British Overseas Chemical Trade in October

Large Increase in Imports

EXPORTS of chemicals, drugs, dyes and colours during October as revealed by the Board of Trade returns for British overseas trade, amounted to a total of £1,456,328, which is £485,126 lower than in October, 1930. Imports totalling £1,590,763 were higher by £336,941, and re-exports totalling £63,600 were lower by £1,015, as compared with October, 1930.

The statistics for exports and imports during each of the past ten months are set out below, showing percentage fall or rise calculated on figures for the corresponding months of last year:—

	Jan.	Feb.	Mar.	Apr.	May	June
Exports	− 36.5	− 40.5	− 30.5	− 19.4	15.4	− 10.0
Imports	− 22.7	− 11.3	− 13.2	+ 4.8	− 16.4	− 7.8

	July	Aug.	Sept.	Oct.
Exports	− 21.5	− 26.3	− 24.7	− 24.9
Imports	− 11.4	− 11.5	− 1.1	+ 26.8

For the ten months of this year exports have dropped £4,608,327 and imports have dropped £754,751 below the figures for the corresponding period of 1930.

	Quantities. Month ended October 31. 1930.	1931.	Value Month ended October 31. 1930. £	1931. £
Imports				
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acetic anhydride ... cwt.	60	445	190	1,207
Acid, Acetic ..... tons	709	778	24,249	26,519
Acid, Tartaric ..... cwt.	3,181	5,210	15,099	22,067
Bleaching materials ,,	6,322	12,178	10,339	30,248
Borax ..... ,,	25,285	14,413	15,070	8,436
Calcium carbide ... ,,	89,578	91,921	54,519	57,377
Coal tar products, not elsewhere specified value	—	—	100,602	5,454
Glycerine, Crude ... cwt.	124	1,878	291	2,123
Glycerine, Distilled ,,	1,037	2,949	3,058	6,451
Red Lead and Orange Lead ..... cwt.	3,080	5,242	5,597	6,822
Nickel Oxide ..... ,,	307	395	1,818	1,745
Potassium Compounds—				
Nitrate (saltpetre) ... ,,	7,420	9,011	7,377	8,275
All other compounds ,,	513,016	961,119	113,380	232,221
Sodium compounds—				
Nitrate ..... ,,	98,873	177,939	34,042	72,060
All other compounds ,,	60,178	51,939	39,475	55,848
Tartar, Cream of ... ,,	3,909	2,257	16,451	8,994
Zinc Oxide ..... tons	731	1,054	21,044	23,577
All other sorts ..... value	—	—	232,577	405,520
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts ..... oz.	190,667	100,386	13,745	8,350
Bark Cinchona (Bark Peruvian, &c.) ... cwt.	2,002	579	8,504	3,102
All other sorts ... value	—	—	109,228	153,903
DYES AND DYESTUFFS—				
Intermediate Coal Tar Products ..... cwt.	50	62	539	450
Alizarine ..... ,,	79	—	1,708	—
Indigo, synthetic ... ,,	—	—	—	—
Other Sorts ..... ,,	3,302	4,573	70,590	111,355
EXTRACTS FOR DYEING—				
Cutch ..... cwt.	1,520	1,593	2,005	2,570
All other sorts ..... ,,	2,469	2,024	7,593	10,403
Indigo, Natural ..... ,,	24	—	672	—
Extracts for Tanning (solid or liquid) ... cwt.	90,307	113,221	90,729	85,877
PAINTERS' COLOURS AND MATERIALS—				
Barytes, Ground ... cwt.	57,785	47,883	10,072	9,631
White Lead (dry) ... ,,	20,479	18,443	34,293	25,311
All other sorts ..... ,,	101,873	150,839	131,530	107,502
Total of Chemicals, Drugs, Dyes and Colours ..... value	—	—	1,253,822	1,590,763
Exports				
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid, Sulphuric ... cwt.	9,017	1,532	3,152	1,422
Acid, Tartaric ..... ,,	1,298	905	7,992	4,907
Ammonium compounds—				
Chloride (Muriate) tons	469	327	7,238	5,177
Sulphate—				
To Spain and Canaries tons	28,827	28,925	201,607	147,830
,, Italy ..... ,,	622	1	5,109	12
,, Dutch East Indies tons	451	—	3,539	—
To China (including Hong Kong) tons	8,377	1,140	62,731	6,596
,, Japan ..... ,,	1,566	3,817	10,817	19,026
,, British West India Islands and British Guiana ..... tons	261	217	1,951	1,207
,, Other Countries ,,	30,229	7,540	214,392	40,176
Total ..... ,,	70,273	41,040	500,149	215,447
Bleaching Powder (Chloride of Lime) ..... cwt.	72,062	52,001	19,607	15,326
COAL TAR PRODUCTS—				
Anthracene ..... cwt.	—	—	—	—
Benzol and Toluol galls.	200,243	165,433 galls.	18,379	10,285
Carbolic Acid (Crude) cwt.	1,199	1,425 cwt.	1,888	300
Carbolic Acid (Crystals) cwt.	1,592	1,134	5,054	2,722
Cresylic Acid ..... galls.	200,420	63,800	20,651	7,142
Naphtha ..... ,,	6,231	798	935	89
Naphthalene (excluding naphthalene oil) ...cwt.	8,539	6,811	2,334	1,043
Tar Oil, Creosote Oil, &c. ..... galls.	3,040,803	2,009,724	82,572	46,355
Other sorts ..... cwt.	17,305	4,339	12,417	5,900
Total ..... value	—	—	143,930	74,436
Copper, Sulphate of ... tons	1,274	692	24,937	11,475
Disinfectants, Insecticides, etc. ..... cwt.	43,773	41,129	112,836	104,911
Glycerine, Crude ..... ,,	174	1,489	208	1,505
Glycerine, Distilled ,,	9,118	6,280	23,672	13,534
POTASSIUM COMPOUNDS—				
Chromate and Bichromate ..... cwt.	1,524	1,446	3,024	3,101
Nitrate (saltpetre) ... ,,	1,031	1,985	1,941	3,300
All other compounds ,,	2,407	5,373	10,173	9,553
Total ..... ,,	5,022	8,804	15,138	15,954
SODIUM COMPOUNDS—				
Carbonate, including Soda Crystals, Soda Ash, and Bicarbonate cwt.	333,977	194,458	91,005	50,968
Caustic ..... ,,	129,974	130,078	84,950	85,312
Chromate and Bichromate ..... cwt.	2,668	704	4,277	1,370
Sulphate, including Salt Cake ..... cwt.	78,259	100,907	9,170	11,428
All other compounds ,,	52,228	50,866	67,540	55,099
Total ..... ,,	597,040	477,703	257,044	210,117
Zinc Oxide ..... tons	357	557	8,590	11,157
Chemical Manufactures all other sorts ..... value	—	—	246,508	221,501
Total of Chemical Manufactures and Products (other than drugs and dyestuffs) value	—	—	1,370,758	996,929

	Quantities. Month ended October 31. 1930.	1931.	Value Month ended October 31. 1930. £	1931. £
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts ..... ozs.	107,856	136,826	10,967	13,753
All other sorts ... value	—	—	209,634	256,808
Total ..... ,,	—	—	220,601	270,561
DYES AND DYESTUFFS—				
Products of Coal Tar cwt.	12,436	9,555	93,343	82,833
Other sorts ..... ,,	8,797	12,987	8,608	10,089
Total ..... ,,	21,233	22,542	101,951	92,922
PAINTERS' COLOURS AND MATERIALS—				
Barytes, Ground ..... cwt.	1,335	4,158	678	1,388
White Lead (dry) ... ,,	2,159	1,371	4,070	2,369
Paints and Colours in Paste Forms ..... cwt.	29,294	17,493	55,575	30,622
Paints and Enamels Prepared (including ready mixed) ..... cwt.	36,286	27,805	114,423	80,702
All other sorts ..... ,,	42,297	38,091	73,398	70,835
Total ..... ,,	111,371	88,918	248,144	185,916
Total of Chemicals, Drugs, Dyes and Colours ..... value	—	—	1,941,454	1,456,328
Re-exports				
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid, Tartaric, including tartrates ..... cwt.	108	133	640	675
Borax ..... ,,	293	809	162	480
Coal Tar Products, not elsewhere specified value	—	—	27	4
Potassium Nitrate (saltpetre) ..... cwt.	52	77	55	103
Sodium Nitrate ..... ,,	60	701	29	259
Tartar, Cream of ... ,,	665	577	3,068	2,420
All other sorts ..... value	—	—	13,977	10,573
DRUGS, MEDICINES AND MEDICINAL PREPARATIONS—				
Quinine and Quinine Salts ..... ozs.	9,366	28,693	903	938
Bark Cinchona (Bark Peruvian, &c.) ... cwt.	489	352	5,750	2,498
All other sorts ... value	—	—	32,354	30,656
DYES AND DYESTUFFS—				
Extracts for Dyeing—				
Cutch ..... cwt.	754	526	1,312	1,246
All other sorts ..... ,,	285	174	911	1,263
Indigo, Natural ..... ,,	26	8	731	146
Extracts for Tanning. ,,	336	3,957	603	3,546
PAINTERS' COLOURS AND MATERIALS— ..... cwt.	693	586	2,220	1,357
Total of Chemicals, Drugs, Dyes and Colours ..... value	—	—	63,615	62,000

Impregnation of Wood with Metal

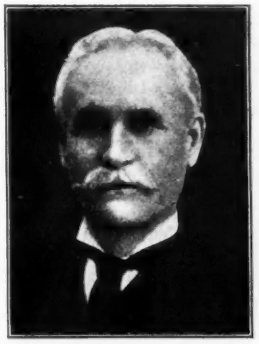
PATENTS based on processes developed by William Esch, of the Eskah Engineering Corporation, of Buffalo, U.S.A., relate to processes for the impregnation of wood with metal. In general the process depends on pressure and temperature combinations, as it is claimed that the infusion may be carried on from a surface coating to full saturation. The product introduces a new construction material with quite a variety of industrial and decorative uses.

Markets for Disinfectants and Insecticides in Bulgaria

A REPORT on the market for disinfectants, insecticides and animal dressings in Bulgaria has been prepared by the Department of Overseas Trade. United Kingdom firms desirous of receiving a copy of this report together with particulars of the Special Register service of information, should communicate with the Department, 35 Old Queen Street, London, S.W.1, quoting refence F.X. 1331.

The late Professor W. F. Reid

PROFESSOR Walter Francis Reid, who has lived in Addlestone (Surrey) for over forty years, died on Wednesday in Kingston-on-Thames Hospital, where he was admitted suffering from extreme debility, Professor Reid was a Fellow of the Chemical Society, and an original member and former President of the Society of Chemical Industry. He was one of the six British delegates who visited Paris in 1919 to assist in the deliberations that led to the formation of the International Union for Pure and Applied Chemistry. His researches upon explosives led to the development of the modern smokeless powder, which was first manufactured at the Stowmarket works of the Explosives Co., Ltd. He had also been closely associated with linoleum, cement and glass silvering industries.



Chemical Plant Exhibition

Exhibitors' Views of Future Plans

A REQUEST has been sent by the British Chemical Plant Manufacturers' Association to all exhibitors at the 1931 Exhibition asking for their views on (a) the value of the exhibition to them; (b) their opinion as to the best interval between future exhibitions; (c) a mututal arrangement to avoid clashing by arranging national chemical plant exhibitions in England, France and Germany, in different years; (d) suggestions for improvement in regard to the organisation of future exhibitions.

Fifty-four firms were asked for their opinions. Fifteen firms did not reply, and twenty-eight firms expressed satisfaction with the results, although the full effect, naturally, will not be felt for some time.

The following numbers of firms considered the interval between future exhibitions should be 4 to 5 years—2; 3 to 4 years—1; 3 years—18; 2 years—3; annually—2; no opinion —13.

Nine firms approved the suggested arrangements to avoid clashing with Continental exhibitions; three firms, further, were definitely of the opinion that the Exhibition in this country should be confined to British firms. Fourteen firms expressed their definite willingness to participate in future exhibitions, while a further six firms would probably do so.

Various other suggestions have been received and will be considered by the Committee for future use. In particular, the value was stressed of a special meeting such as the Jubilee celebrations as an attraction which intensified publicity. Other points include the improvement of the catalogue as an advertising medium, the restriction of entry to British firms, alteration in hours of opening, the award of medals and diplomas, improved direction signs, all exhibits being on one floor, the restriction or widening of the scope of the Exhibition, other centres than London, etc.

In view of the promise of support for a future exhibition, a survey has already been made of available halls, with the provisional idea of an exhibition in 1934. This should enable the Managing Committee for the next Exhibition to select a really suitable hall, if such exists, and so avoid the main difficulties encountered owing to the inherent disadvantages in the construction of the Central Hall.

British Association of Chemists

THE annual dinner of the Association will be held at the Palace Hotel, Bloomsbury Street, W.C.1, on Saturday, November 28, and it is hoped that members will make a special effort to attend. Tickets 10s. 6d. (exclusive of wine), may be obtained from the General Secretary, British Association of Chemists, Empire House, 175 Piccadilly, London, W.1. A dance will follow the dinner.

The Natural Resins

A Plea for Wider Scientific Study and Utilisation

At a meeting of the Oil and Colour Chemists' Association, held in the rooms of the Institute of Chemistry on Thursday, November 12, Mr. T. Hedley Barry lectured on "A Scientific Study of the Natural Resins." Mr. Noel Heaton, President of the Association, was in the Chair.

So much had been heard about the synthetic resins, said Mr. Barry, that it was time the natural resins had a look in. The natural gum trade, like most other trades, was in a very unhappy state. One reason was the general trade depression. Another was the extraordinary change that had occurred in the distribution of the main resin producing areas of the world during the last few years, and this was perhaps not sufficiently appreciated. Of the total shipments of copals, the Belgian Congo had supplied 54 per cent. in 1926, 46 per cent. in 1928, and 55 per cent. in 1929; 37 per cent. came from the Dutch East Indies in 1926, 37 per cent. in 1927, and 44 per cent. in 1929. So that about 90 per cent. of the copals—the ordinary type and the Manila type of copals—were in the hands of the Belgian operators in the Congo or of the operators in the Dutch East Indies. About 80 per cent. of the copals from the Dutch East Indies came from Macassar, and the Philippines (which gave their name to that type of resin) contribute only about 9 per cent.

Necessity for Standardisation

If natural resins were to maintain their position in competition with the synthetic it was necessary to ensure standardisation, and mass production to keep costs down. It was perhaps somewhat surprising that the production of natural resins appeared to be maintained in a remarkable manner, in spite of all that was said about synthetic resins. For example, the resin threatened very largely was shellac, yet in the three years from 1926 to 1929 the average production was higher than that for the three years preceding the war, and the price about three times as much. Again, the annual production of the Congo copal had increased in twenty years from a few tons to as much as 16,000 tons two years ago.

The Congo resin industry provided an interesting example of what could be done by organisation and the development of proper methods of collection and sorting. This resin was practically entirely fossil resin. It was collected by the natives in the wet season of the year. At one time it was more or less sorted and washed with caustic soda at the collecting stations. During the last few years, however, the sorting and cleaning had been carried out in Belgium to a large extent. Instead of being cleaned by the caustic soda or the native scraping knife, it was subjected to a blast of sand or iron filings in a rotating drum. That was a very delicate operation, the efficiency depending very much upon the size and shape of the abrasive particles, but when properly carried out it produced a resin in a very clean condition, without chemical action, and the dust was useful in alcoholic solution for a varnish. If iron filings were used for the cleaning operation, they could be separated from the dust by means of a magnetic separator. That process was dealing with something like 8,000 tons a year, and it represented a very important development in resin production from the point of view of the varnish trade. The process was thus in the hands of European supervisors, who were in touch with the various industries using the natural resins and were very much alive to the importance of finding new uses for them. For instance, Congo resin was now finding its way into various moulding composition to a noteworthy extent.

Continuous development in connection with the collection of resin and the care of the trees had been effected in the Dutch East Indies from 1916. Some of the resin there was of the fossil type, and some was obtained from trees by fresh exudation. Some interesting experiments had been carried out on the effects of ageing. Alcoholic solutions prepared from resins of varying ages exhibited extraordinary differences of viscosity, and such experiments indicated the best times at which to collect the resins in order to ensure that they were in the most suitable condition for the various purposes of the varnish trade. Research into the botanical aspects and the nature of the exudations had also been carried out in the Philippines, but it was a little surprising that that work was not followed up, because although we knew quite a lot about the constitution and properties of Manila copals, and a good deal about the trees and the conditions of exudation, there had been little or no work done on the changes occurring during resin formation.

Indian Turpentine Industry

The Indian turpentine industry represented Britain's great contribution to the systematic development of the production of resin of that type. India contained our only turpentine area, and it was, therefore, of very great interest to us. It afforded a remarkable example of what could be done by organisation and careful control in the face of almost insurmountable difficulties. The turpentine area in India was a comparatively thin belt of trees along the Himalaya mountains, but it had been found possible, by the introduction of the latest and most scientific methods, and by the development of centralised factories, to produce a resin and a turpentine which were admittedly of first-class quality and were supplying nearly all India's internal needs in this direction. It still cost rather more to send the products to South India, however, than to export, because of the difficulties of transport, but the development of the industry was a remarkable achievement, and was mainly the result of the work of the Indian Civil Service. The American turpentine industry also afforded great scope for research, for it was under control. The Forestry Service there had carried out experiments on resin production, re-afforestation and the conservation of forests, and the means of obtaining the maximum yields of turpentine of the highest quality, and some remarkable results had been obtained. In the period from 1903 to 1911 the production of resin of the lower grades represented 26 per cent. of the total, but during the last five years had been only 5 or 6 per cent.

Discussing the chemistry of resins, he said he felt that there was a great future for the chemist who would carry out original work in connection with natural substances. It seemed that the defect in our knowledge of resin chemistry was that it was confined almost entirely to the turpenic derivatives, and we had not yet tackled the resines. The resine contents of the natural resins were most important from the point of view of the physical properties, which played a more important part in the use of resins in industry.

Points from the Discussion

The President, commenting on Mr. Barry's reference to shellac as an example of a resin the consumption of which was increasing, said that perhaps it was an unfortunate example for that purpose, because it was one of the few natural resins which almost defied the competition of the synthetics; no synthetic products had yet been found to compare with natural shellac, so that one would expect it to hold its own more than many of the natural resins. With regard to the effects of the introduction of the synthetic resins, he suggested that if they had not been introduced, the position of the users of natural resins might have been rather unfortunate, because, bearing in mind the constant increase in consumption of resins, we might by this time have experienced difficulty in obtaining adequate supplies of the natural resins. Therefore, the use of synthetic products in some of the newer industries might have relieved the pressure on supplies.

Mr. Barry, replying to the discussion, said that shellac was a resin unique not only in its properties, but also in regard to the methods of its production and handling. Its position in industry was certainly rather unstable. Until recently, nearly 50 per cent. of the output went into the gramophone industry, but that industry threatened, sooner or later to introduce a system of sound reproduction without the use of records. Commenting on price variations, Mr. Barry pleaded for scientific organisation of the commercial and financial side of the industry as well as the technical side.

Platinum as a Catalyst

Use in Nitric Acid and Sulphuric Acid Industries

THE history, occurrence, metallurgy, properties and uses of platinum were dealt with at length in a paper which Mr. Donald McDonald, F.I.C., M.I.Chem.E., presented to the Chemical Engineering Group, of which he is honorary secretary, at their meeting on Friday, November 13.

The use of platinum as a catalyst in certain commercial processes has been responsible for a large turnover of the metal. To-day the Ostwald process for the oxidation of ammonia to nitric oxide for the synthetic manufacture of nitric acid and nitrates is a large user of platinum. Here the catalyst is made from fine wire, of normal diameter 0.06 mm., woven into gauze having about 80 meshes to the inch. Some difference of opinion, however, exists on the advantages or disadvantages of pure platinum compared with alloys for the purpose. In America, however, it is claimed that an alloy of 10 per cent. of rhodium with platinum, or, better still, some special alloys the constitution of which have not been disclosed, show considerable advantages over pure platinum in speed of activation, efficiency of conversion, length of life, and stability at the high temperatures required in the process.

Competition with Vanadium Catalysts

In the sulphuric acid industry, platinum is used as a catalyst for the oxidation of sulphur dioxide to sulphur trioxide. Before and during the war platinum was used in this process in the form of finely divided spongy metal deposited in a suitable carrier. The immense requirements of sulphuric acid for munitions caused such a demand as could only be satisfied by strict government control in all countries concerned. Difficulties of supply, and the high price which resulted, stimulated the invention of substitutes, and now platinum has a serious competitor in one of these, which is described in its patents as containing "pseudomorphous dehydrated zeolites in which vanadium is combined in a non-exchangeable form and the active bases (silver, copper, cobalt, nickel) in an exchangeable form." In the early days of the process the "contact mass" consisted of asbestos, which had been soaked in platinum chloride and ignited. Later calcined magnesium sulphate was used in one modification, but the principle underlying the constitution of the mass was essentially the same. While extremely efficient in its conversion properties, it had two serious drawbacks, namely, the large amount of capital outlay due to the high price of the metal, although the high scrap value at the end of its usefulness must not be forgotten, and the fact that a platinum catalyst is readily poisoned by the presence of certain impurities in the gases used, thereby seriously reducing its conversion efficiency. As the most dangerous of these impurities, arsenic compounds and chlorides, are almost invariably evolved in the burning the natural sulphur bearing ores to form sulphur dioxide, special arrangements for a scrupulous purification of the gases became essential, and scrubbers, filters and Cottrell plants had to be installed.

Improvements with Silica Gel as Carrier

When the vanadium catalyst appeared in the market, high claims were made for its resistance to poisoning, claims which naturally assured it a good reception at once and which have been largely substantiated under commercial conditions. It was thought that the days of platinum in this process were numbered, but this has not been the case, and although vanadium catalyst has a very wide use to-day, at least three large plants for the production of sulphuric acid which have been put into operation during the last few years are using platinum. The various reasons for its continuance are given in a good summary which will be found in *Applied Chemistry Reports*, 1930, (page 184). The amount of platinum necessary to obtain unit conversion has now been cut down enormously, and the capital to be invested in platinum to produce one ton of sulphuric acid need not exceed to-day one fortieth of that required in 1918. Some of this difference is due to the fall in market price, but the greater part is due to the discovery of a new carrier, silica gel, in which a little platinum goes much farther than it did on asbestos. It is also claimed for the silica gel mass that it is just as insensitive to arsenical poisoning as the vanadium catalyst; that it permits of a very high conversion ratio at rapid rates of gas flow; and that it is not affected by a continued low oxygen content in the gas, whereas vanadium catalyst shows a marked decrease in conversion efficiency under these circumstances.

In the course of the discussion Dr. S. Robson recalled that Faraday in 1833 had carried out experiments on the properties of platinum as a catalyst and suggested that sulphuric acid makers in the early days who used the contact process could have learned a great deal from a study of Faraday's work. For instance, Faraday demonstrated that the platinum must be clean and must be kept clean, but that fact had been overlooked for a long time and retarded the progress of the contact process for tens of years. As regards the relative merits of platinum and vanadium, it could not be said that either was the best because both had applications in certain circumstances. At the same time it was ridiculous to suggest that vanadium is as efficient as a catalyst as platinum. It had a much greater activity and worked at a much lower temperature. On the other hand, vanadium catalysts were more resistant to poisons than platinum catalysts.

Criticism of Medicine Stamp Act

Retail Chemists Fined £10 for Revenue Offence

MR. JUSTICE ROWLATT in the King's Bench Division on Monday heard an action brought by the Attorney General against Lewis and Burrows, Ltd., for having sold in October, 1930, from their shop in New Oxford Street, a preparation in the form of a pot of vapour rub contained in a carton compiled by defendants for the cure of throat complaints and congestion of the respiratory organs, but without having affixed to the carton a wrapper bearing the revenue stamp, and that the preparation was not "known, admitted, nor approved," so as to bring it within the exemption of the Stamp Act, 1812.

The Solictor General (Sir Thos. Inskip, K.C.) who appeared for the Attorney General, said that the defendants had incurred a penalty of £10, and he urged that defendants' preparation did not come within the requirements of the Act for exemption from stamp duty.

Sir Albion Richardson, K.C., appeared for defendants, whose plea was that they were not guilty of the offence, as their preparation came within the exceptions in the Act.

Judgment

Giving judgment for the Crown, his lordship said that the Attorney General sought to recover from defendants the penalty of £10 under 52 George III, page 150, for selling a pot of vapour rub. The question turned on whether defendants could bring themselves within the special exemption within the Schedule of the Act. It was said that they failed in two respects, the first of which was, that they were "original or first vendors," within the words of one of the limitations of the exemptions. In Farmer v. Glyn-Jones, 1903, K.B. 6, it was held that a retailer buying from a wholesaler, and then bottling it and fixing a label to the container was not the "original or first vendor." The Solictor General sought to distinguish this case from the other on the ground that here the article was ordered to be made up specially for the defendants as appeared by the letters, so that the position was the same, as if defendants had made it themselves. He could not give effect to that distinction.

The other point was, whether the substance was a mixture or preparation of which the different properties were "known, admitted and approved of." The facts were, that the formula according to which this "vapour rub" was made up, was to be found in the publication known as *Pharmaceutical Formulas* but under the name of "Chest vapour rub." If defendants had thus described their article (F.M.1) his lordship would have held that the properties were "known, admitted and approved of."

The Crown succeeded on this point and were entitled to judgment for the penalty claimed with costs. His lordship added with regard to the memorandum issued by the Commissioners, that the decision in Farmer v. Glyn-Jones was not taken into account in arriving at his decision. It was convenient that such memorandum should be issued,if it was understood that public departments had no power in law to bind themselves as servants of the Crown by such pronouncements. His lordship added that it was time that the confused obsolete verbage of the Act should be recast.

The Claims of the Chemical Club

[From a Clubman.]

May I call upon the good services of The Chemical Age on behalf of the Chemical Club? You probably have seen the annual report and balance sheet from which you will have observed that there has been a decline in the Club membership, and that the finances are by no means in a happy position. A loss of £100 occurred on last year's working in spite of every economy. Since the Club's resources are slender, active steps must be taken to improve the position by securing new members, since there are practically no economies of any importance which can be effected. The present period of industrial depression has affected the membership of practically every club, but with the return of a strong National Government, pledged to redress the trade balance, one might hope that this will be only of a temporary nature. In any case, there must be at least 10,000 chemists in the chemical profession and in the chemical industry, and among these there are doubtless many not at present members of the club who would find it beneficial to themselves to support a social institution which plays a very important part in promoting the spirit of good fellowship amongst chemists.

The facilities and amenities which the club provides cannot be obtained anywhere else for such a low subscription or in such a convenient locality, and it is felt that many individuals have not become members because they have not been fully advised of the advantages of the club. The change in the title of the club, which was effected when the rules were revised a few months ago, should remove any misunderstanding which may have existed in the minds of academic chemists in the past that the club was intended for the chemical industry only. It is, therefore, to be hoped that a large influx of members will come from this quarter, since the more intimate contact of the academic and industrial chemist will be to the advantage of all concerned.

The present membership is, as you know, some 700, and to enable the club to pay its way on the present basis we should be satisfied if we could get another 100 new members.

We should be very grateful for any publicity The Chemical Age could give on behalf of the club, and anyone interested can obtain full particulars and a list of present members on application to the Secretary.

Chilean Nitrate

Experts to Submit Recommendations

The Minister of Finance (Chile) has issued a decree stating that as the report of the Cosach inquiry committee concludes by suggesting substantial modifications to the present nitrate system, it becomes imperative to consider the effects of such modifications, applied wholly or partially, and the means of their practical application without seriously disturbing the national economy. The decree appoints a committee of six experts, including Senor Osbaldo de Castro, to submit recommendations reforming the organisation authorised by Law No. 4863.

The Case for British Bromides

Foreign manufacturers of bromides, who partially suspended their activities owing to the depreciation of sterling, have once more embarked on a policy of dumping. This statement is emphasised in a circular which has just been issued by May and Baker, Ltd., of Battersea, S.W.11, who are in a unique position to supply British bromides which are superior in quality to the foreign product, even at competitive prices. As British manufacturers they claim as their right the British home market, together with a reasonable share of the export trade to countries who do not manufacture bromides. This is a reasonable claim as compared with that of foreign manufacturers, who retain their home markets, and also attempt to monopolise world export trade.

Synthesis of Quinine Alkaloids

It is announced by the State Institute of Chemistry at Hamburg that Dr. Rabe and his assistants have succeeded in producing synthetic hydroquinine and hydroquinidin. For several years Dr. Rabe has been working on the chemical structure of the quinine alkaloids and has discovered a process for making synthetic quinine in large quantities.

Road Making Research by South Metropolitan Gas Co.

How the science of roadmaking is being developed by the chemist in a constant search for materials which will meet the modern demand for stronger and safer road, was explained by Mr. H. Pickard at the Public Works, Roads and Transport Congress, London, on Tuesday, November 17. During the past few years, stated Mr. Pickard, the South Metropolitan Gas Co. has carried out extensive investigations of the physical properties of tars and of their use in the construction and maintenance of roads, and in the laboratory, attempts have been made to explore this prolem of surfacing. The purpose of the surface tarring of a road has long ceased to be a mere palliative for the dust nuisance, and it is now recognised as serving an integral part in the provision of a wearing surface having certain well defined characteristics. The wearing surface produced by this method of treatment must be cheap and have a reasonable life; it must protect adequately the underlying road structure; must be non-slippery and even in its early days must be free from any tendency to "picking up" so that its construction presents the minimum disturbance to users of the road. In the laboratories of the South Metropolitan Gas Co. attempts have therefore been made to determine the degree of adhesion of tar and other bituminous substances to smooth surfaces of solid materials, and considerable data regarding the requisite properties of a good road surface has now been collected together.

British Canning Industry

On Tuesday, November 17, *The Times* published a Special Number devoted to the British canning industry. This industry, though a young one, is rapidly developing on important lines in Great Britain, and is not confined to preserved fruit and vegetables. There is a very important section of it concerned with meat and fish and another with milk. All these various branches are fully reviewed in this Special Number of *The Times* wherein the entire process of canning foodstuffs is fully described. Attention is also paid to such important matters as the creation of new markets by the expansion of the canning industry, the manufacture of syrup from British-grown sugar, the chemical and research sides of food preservation, the making of the machinery whereby the canning processes are carried out, and general principles underlying the preservation of foods in containers.

New Laboratories at Sheffield

An extension to the research laboratories of the English Steel Corporation, Ltd., at Vickers Works, Sheffield, was opened on Tuesday, November 17, by Sir Joseph Thomson, Master of Trinity College, Cambridge. There were present a number of Government Department representatives, and representatives from steel works in many parts of the country. Sir Joseph Thomson described these new laboratories as a signal token of the advance in importance attached to research by industry. It was a comparatively recent thing for research and industry to be linked together. To the people engaged in the laboratories he particularly emphasised the importance of looking for the unexpected, for it was from the unexpected discovery that new industries were formed and new employment was created.

A New British Zinc Oxide

Sir S. W. Royse and Co., Ltd., of 20 Albert Square, Manchester, have been appointed the sole selling agents in the United Kingdom for zinc oxide (93/95 per cent. ZnO and 3/5 per cent. lead) passing 250 mesh, manufactured by the Zinc Manufacturing Co., Ltd., of Dartford and London. They are also now distributing a new British production of genuine zinc oxide red seal 99.5 per cent. ZnO, which is of extremely fine texture.

Overseas Trade Special Service Register

In the House of Commons on Monday, November 16, Major Colville stated that the number of firms on the special service register of the Department of Overseas Trade on November 1, 1929, 1930, and 1931 was 2,588, 2,560 and 2,537 respectively.

From Week to Week

SIR MAX MUSPRATT was on Tuesday, November 17, re-elected Chairman of the Liverpool Finance Committee.

ACCORDING TO A REPORT FROM BUCHAREST five of the leading Roumanian petroleum companies—Credit Minier, I.R.D.P., Petrol Romanesc, Petrol Govora and Sondajul—with a total initial capital of about £2,000,000, have reached a basis of agreement on which they will unite to form a single enterprise.

DR. JACOB PAPISH, professor of spectroscopy at Cornell University, has identified one of the two remaining elements in the periodic classification. Known, up to now, as eka-Caesium and occupying gap 87 in the table, the new element is stated to be an insoluble solid which cannot yet be isolated on account of its high inflammability.

AN ARRANGEMENT HAS BEEN ENTERED INTO between G.W.B. Electric Furnaces Ltd. (Gibbons Bros. Ltd. and Wild-Barfield Electric Furnaces Ltd.) and Demag-Elektrastahl G.M.B.H. Düsseldorf, whereby G.W.B. Electric Furnaces Ltd. will have the sole selling rights for Demag electric aluminium melting furnaces in the British Isles.

DR. W. H. CCATES, a director of Imperial Chemical Industries, Ltd., will speak on " Our Currency System " at a meeting of the British Industrial Purchasing Officers' Association on November 27. The meeting will be held at the Hotel Rubens, Buckingham Palace Road, S.W., at 6 p.m. Invitations may be obtained from the Association at 51 Palace street, S.W.

A PLANT HAS JUST BEEN COMPLETED at a cost of half a million sterling at the Modderfontein Dynamite Factory for the extraction of nitrogen from the air. The scheme originated during the late Lord Melchett's visit to South Africa. Sir E. Oppenheimer is of the opinion that it will be possible to adapt the plant to extract oil from coal. The experimental Bergius plant shows an extraction of 300 gallons per ton of coal.

SIR THOMAS PUTNAM has resigned from the Board of the English Steel Corporation, Ltd. This company was registered in 1929 to acquire the steel and allied businesses of Vickers-Armstrong, Ltd., at Sheffield and Openshaw; and Cammell Laird and Co., Ltd., at Sheffield and Penistone. It also controls Darlington Forge, Ltd., and Industrial Steels Ltd.

WILLIAM BRIGGS & SONS, LTD., of Dundee and London, tar distillers and crude oil refiners, are producing an oil fuel suitable for the new heavy-oil engined motor buses and similar vehicles. The crude asphaltic oil used in the distillation process is being produced entirely within the British Empire. By the beginning of the approaching year 20,000 tons of the crude oil will have passed into the tanks at the refinery.

A PATENT PNEUMATIC PLANT for dry-cleaning coal has been installed at one of the collieries owned by the Consett Iron Co. This plant has been designed by the Whessoe Foundry and Engineering Co., of Darlington, and it is the first plant of its kind to be erected in this country. Preliminary tests have been successful, and the plant is now in operation dealing with nearly 1,000 tons of coal per day. The process is said to be simple and economical, and it will enable the colliery to market a clean coal with low ash content.

THE TRIAL OF EIGHT PERSONS alleged to have been connected with an international illicit traffic in narcotic drugs opened at Basel on Monday, November 16, and is expected to last a fortnight. The trial is the outcome of discoveries at Cairo made by Russell Pasha, chief of the Cairene Police, and his Egyptian Narcotics Intelligence Bureau in October, 1929—when it was found that heroin was being smuggled into Egypt from Switzerland in the guise of powdered glue. The accused persons are Dr. Fritz Müller, of Breisach, in Baden, who has a Swiss authorisation for the manufacture of drugs at Basel, and his wife; Edvardo Ballinari; a Basel chemist named Piatti; a Genevese manufacturing chemist named Dr. Hubert Rouch; a German doctor of law named Diepenhorst; a Basel tradesman, Wirz; and a Zürich tradesman, Gottlieb Weidman.

MR. JOHN ALLAN, B.Sc., A.I.C., Morgan Academy, Dundee, has been appointed head of the science department in Fraserburgh Academy. Mr. Allan was educated at the Royal Technical College, and Glasgow University, from which he graduated in 1922.

JOHN BROWN AND CO., LTD., have decided to erect plant at their Rotherham Main Colliery, South Yorkshire, for the manufacture of refined benzol, the trade in which has been stimulated by the increased duty on imported petrol. This will mean the establishment of a new industry in the Sheffield district.

THE COUNCIL OF SHEFFIELD UNIVERSITY have decided to confer the title of Emeritus Professor on Dr. W. P. Wynne, late professor of chemistry. They have also made the following appointment to the Chair of Metallurgy; Professor J. H. Andrew, D.Sc., (Manchester), professor of metallurgy in the Royal Technical College, Glasgow.

THE NOBEL PRIZE for chemistry has this year been awarded jointly to Professor Bosch, of the Badische Anilin und Sodafabrik, for his process of large-scale production of ammonia, and Professor Bergius, of the I. G. Farbenindustrie, for his process of obtaining oil from coal. The award of the 1931 prize for physics has been postponed until next year.

THE ROYAL SOCIETY have this year awarded the Royal Medal to Sir Richard Glazebrook for his distinguished work in experimental physics; the Davy medal to Professor A. Lapworth for his researches in organic chemistry, particularly those in connection with tautomerism and the mechanism of organic reactions; and the Hughes medal to Professor W. I. Bragg for his pioneer work on the elucidation of crystal structure by X-ray analysis.

THE 7TH NORMAN LOCKYER LECTURE—established by the British Science Guild as a means of periodically directing the attention of the public to the influence of science upon human progress—will be given by Dr. H. H. Dale, in the Goldsmiths' Hall, Foster Lane, London, E.C.2., on Tuesday, November 24, at 4.30 p.m., the Rt. Hon. Sir Samuel Hoare, Bart, G.B.E., C.M.G., L.L.D., M.P., President of the Guild, in the Chair. The subject of the lecture will be " Biology and Civilisation."

A COURSE OF THREE LECTURES on " Atomic Reactions " will be given at King's College, London, by Professor M. Polanyi, at 5.30 p.m., on November 30 and December 2 and 4. Admission will be free, without ticket. Professor Polanyi is professor of chemistry at the Kaiser Wilhelm Institute für physiktalische Chemie und Electrochemie, Berlin. At the first lecture the chair will be taken by Professor A. J. Allmand, professor of chemistry, University of London.

SPECIAL PROVISION has been made at the new goods station at St. Austell, which was opened for traffic on Monday, November 2, for dealing with the china clay traffic in a more modern and expeditious manner. Hitherto trucks have been loaded by men with shovels, but the new bank is level with the tops of the trucks and vehicles will be able to come alongside and tip their loads into the former. There is now accommodation for 43 trucks. The improvements have been carried out at a cost of £40,000.

AN EXTRAORDINARY general meeting of Sudan Salt, Ltd., has been called for the purpose of passing a special resolution defining the rights proposed to be conferred on 50,000 of the unissued shares which are to be issued as Cumulative Participating Preference shares. To enable the company to arrive at the stage of production on a commercial scale the directors, after consultation with the Committee of Shareholders, have decided that an issue of preference shares carrying a fixed cumulative preferential dividend of 7 per cent. and a participation of 50 per cent. in profits and surplus assets shall be made. Shareholders will be invited to subscribe for 36,000 of these shares at par in the proportion of one share for every five shares held.

Obituary

WILLIAM FOULKES LOWE, F.I.C., F.C.S., city analyst for Chester and for the counties of Denbighshire, Flintshire, Caernarvonshire and Anglesey, aged 81.

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Accepted Specifications

353,622. CATALYTIC GAS REACTIONS. J. Y. Johnson, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, June 6, 1930.

Catalysts are activated by an alkali or alkaline earth metal by passing the reaction gas over the metal at a temperature at which it is vaporised, and then passing the gas to the reaction chamber. Thus, a nitrogen-hydrogen mixture is passed at high temperature and pressure over potassium and then over an osmium catalyst, or over calcium and then over an iron catalyst, and methane is passed over potassium and then over finely divided nickel to obtain hydrogen and hydrocarbons.

353,749. PHOSPHORUS AND ALUMINA. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, September 4, 1929.

A mixture of aluminium phosphate, coke and sulphide ores is fused at 1,600°-1,700° C. in an electric furnace, and the alumina liberated dissolves in the aluminium sulphide formed by reaction with sulphides. The resulting melt is treated to obtain alumina. Phosphorus and carbon monoxide escape, and the phosphorus may be converted into phosphoric acid.

353,537. ACRIDINE DERIVATIVES. A. Carpmael, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, April 30, 1930.

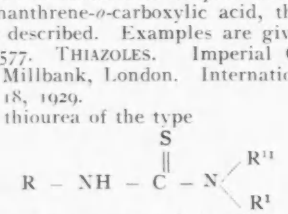
2 : 4-Dihalogen-benzoic acids, the preparation of which is described, are condensed with 4-alkoxy-anilines to obtain the 4-alkoxy-3¹-halogen-diphenylamine-6¹-carboxylic acid, and thence the 2-alkoxy-6-halogen-acridones. These are halogenated to obtain the 2-alkoxy-6 : 9-dihalogen-acridines.

353,538. AZO DYES. A. Carpmael, London. From L. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, April 30, 1930.

A diazo compound of an aromatic or heterocyclic non-sulphonated amine or derivative, or an aromatic aminoazo compound or diamine is coupled with an arylide of a hydroxyphenanthrene-*o*-carboxylic acid, the preparation of which is also described. Examples are given.

353,577. THIAZOLES. Imperial Chemical Industries, Ltd., Millbank, London. International Convention date, May 18, 1929.

A thiourea of the type



where R is an aryl radicle which may contain halogen, alkyl or alkoxy substituents, but which has one free position *o*- to the NH group, R^1 is hydrogen, an aryl or alkyl group, and R^{11} is hydrogen or an alkyl group, is treated with sulphuryl chloride in the presence of Chlorbenzene or ethylene dichloride. The resulting hydrochloride is treated with alkaline hydroxides, carbonates or bicarbonates to obtain 2-amino-arylene-thiazoles.

353,578. DYE INTERMEDIATES. A. Carpmael, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, May 16, 1930.

2 : 8-Dihydroxynaphthalene-6-sulphonic acid is treated with one molecule of an arysulphochloride in presence of alkali, and the 8-ester produced is again treated with arylsulphochloride to obtain the di-ester which is partly saponified to the 2-ester. Alternatively, 2-amino-8-hydroxynaphthalene-6-sulphonic acid is treated with an arylsulphochloride in presence of alkali, and the amino group converted into the hydroxy group. Examples are given.

353,783. CALCIUM CARBOXYLATES. I. G. Farbenindustrie Akt.-Ges, Frankfort-on-Main, Germany. International Convention date, October 10, 1929.

Paint driers are obtained by treating a solution of naphthenic linoleic, resinic, benzoic or stearic acid in turpentine, benzine, or cyclohexanone with calcium oxide, hydroxide, carbonate, formate or acetate at a temperature of 120°-140° C. but below the boiling point of the solvent.

353,863. DYES. Imperial Chemical Industries, Ltd., Millbank, London, H. A. Piggott and E. H. Rodd, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, February 24, 1930.

Indole or a substituted indole having a free β-position is treated with a condensation product of a substituted formamidine H.C (NHR) : NR^1 in which R and R^1 are hydrogen or aryl residues, and a heterocyclic nitrogen compound containing reactive methyl or reactive external methylene groups, in the presence of acetic anhydride. In an example -methyl-indole is treated with the reaction product of 2-methyl benzoxazole ethiodide and diphenyl-formamidine, and the product dyes tannined cotton greenish yellow.

353,866. POLYMERISED VINYL COMPOUNDS. J. Y. Johnson, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany.

Vinyl acetate, chloracetate or chloride is polymerised at 40°-160° C. in the presence of per compounds such as barium peroxide, benzoyl peroxide, percarbonates, persulphates or perborates, together with organic acid anhydrides but in the absence of solvents or diluents. When the products become insoluble in oxygenated organic solvents, they are saponified to obtain polymerised vinyl alcohol which is soluble in water but gives highly viscous solutions and may be used as a dispersing agent. Examples are given.

353,871. VULCANISATION ACCELERATORS. Dunlop Rubber Co., Ltd., 32 Osnaburgh Street, London, D. F. Twiss and F. A. Jones, Fort Dunlop, Erdington, Birmingham. Application date, April 23, 1930.

Vulcanisation accelerators are obtained by treating mercaptobenzthiazoles, dithiocarbamates and alkyl-zanthic acids having three or more carbon atoms in the alkyl group, and their homologues and simple substituted derivatives with esters of halogen-substituted derivatives of formic acid, *e.g.*, chloroformic esters, bromoformic esters and chloracetic esters. The preparation of 2-carbethoxy-benzthiazyl-sulphide, carbethoxy-diethyl-dithio-carbamate, carbethoxy-pentamethylene-dithiocarbamate and carbethoxy-isopropylxanthate is described.

353,872. CONDENSATION PRODUCTS FROM ALIPHATIC ALDEHYDES, PHENOLS AND UREA, ETC. L. Pollak, 6 Gerbergasse, Aussig-on-Elbe, Czechoslovakia. International Convention date, April 23, 1929.

Formaldehyde or acetaldehyde is condensed with one or more polyhydric phenols such as resorcinol, cresorcinol, phloro-glucinol, pyrogallol, catechol, quinol or hydroxyquinol, together with urea or a derivative at a temperature below 50° C. in the presence of a small quantity of acid condensing agent. Vegetable tanning materials may also be present. The products are water-soluble tanning agents.

353,878. DYES. Imperial Chemical Industries, Ltd., Millbank, London, S. Thornley of Scottish Dyes, Ltd., Earl's Road, Grangemouth, and A. Y. Twemlow, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, April 28, 1930.

Compounds such as 5-nitro-4-amino-*m*-xylene or 5-chloro-3-nitro-*o*-toluidine are employed for dyeing cellulose esters and ethers in fast non-phototropic yellow shades.

353,886. DYES. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, April 27, 1929.

Isodibenzanthrone or chloro or bromo derivatives are halogenated with anhydrous metal chlorides or bromides such as those of iron, aluminium, antimony or mercury. The reaction is effected in the presence of substances which lower the melting points of the metal halides, such as alkali and alkaline earth metal halides, and with catalysts such as iodine or its compounds, and organic solvents or diluents. Several examples are given.

353,889. DYES. Imperial Chemical Industries, Ltd., Millbank, London, I. H. Heilbron and F Irving, Liverpool University. Application date, January 21, 1930.

Cyclammonium polymethine dyes are obtained by condensing two molecular proportions of a cyclic ammonium salt con-

taining a reactive methyl group with one molecular proportion of a compound having the formula

$$Q - C = C - CH = P$$
$$\quad\quad |\quad\quad |$$
$$\quad\quad X\quad Hal$$

where Q is hydrogen or a carboxylic acid radicle, X is a replaceable monovalent atom or group, and P is a replaceable divalent atom or radicle such as oxygen, NR (R being alkyl, aryl or aralkyl), or $(OR)_2$ (R being alkyl π). A weak acid salt may also be present in sufficient quantity to convert one part of the cyclic ammonium salt into its methylene base in situ. The basic dyestuffs obtained have the property of sensitising photographic emulsions to red and infra-red. Several examples are given.

354,201. DYE INTERMEDIATES. Imperial Chemical Industries, Ltd., Millbank, London, M. F. S. Choate, S. Coffey and C. R. Henshaw, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, May 2, 1930.

An aromatic amine such as aniline, toluidines, xylidines, chloranilines, α- or β-naphthylamine is mixed with a high-boiling organic liquid inert to the amine and sulphuric acid, and sulphuric acid is added with agitation to give the acid sulphate of the amine, which is then heated to obtain the amine sulphonic acid. The high-boiling liquid may be chlorbenzene, tetrachlorethane, solvent naphtha, xylene, petroleum fractions, etc.

354,215. LIQUID AND GASEOUS FUELS. Ruhrchemie Akt.-Ges., Holten, Sterkrade, Germany. International Convention date, January 26, 1930.

Solid fuels are converted into water gas and thence to methane-containing gases and benzine hydrocarbons. The methane-containing gases are converted into illuminating gas by heating for a short time above 1,000° C. as in specification 316,126, with recovery of aromatic hydrocarbons. These are mixed with the benzine hydrocarbons first obtained to obtain anti-knock motor fuel.

354,226. HYDROXYPHENYL-ETHANOLAMINES. H. Legerlotz, 70 Yorkstrasse, Berlin. Application date, April 25, 1930.

Solutions of *m*- and *p*-hydroxy-ω-methylamino-acetophenone or their derivatives in which the hydrogen atom of the hydroxyl group is replaced by a hydrocarbon radicle or an acyl group, are hydrogenated in the presence of palladium, platinum oxide or nickel in colloidal form deposited on carbon, barium sulphate or kieselguhr. With the benzyloxy derivative, the benzyl group is split off during hydrogenation, but with acyloxy derivatives the acyl group must be split off by saponification. The products are *m*- and *p*-hydroxyphenyl-N-methylamino-ethanol-1.

354,264. DYES. Kodak, Ltd., 61 Kingsway, London. Assignees of L. G. S. Brooker, Kodak Park, Rochester, N.Y., U.S.A. International Convention date, February 2, 1929.

Dyestuffs obtained by condensing a 1-methylnaphtho-thiazolinium quarternary salt with ethyl *o*-formate in pyridine are used to sensitise photographic emulsion.

354,281. DYES AND INTERMEDIATES. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, January 31, 1929.

A 3-halogen-2 : 5-diarylamino-1 : 4-benzoquinone is treated with sodium sulphide in the presence of a diluent, and the 2 : 5-diarylamino-3-mercapto-1 : 4-benzoquinone obtained is oxidised with air, nitrobenzene or sulphur. The two arylamino groups may be the same or different, and derived from primary or secondary amines of the benzene, naphthalene, anthracene or anthraquinone series. Examples are given of products derived from 2 : 5-dianilido-3-mercapto-1 : 4-benzoquinone, 2 : 5-di-β-naphthylamino-3-chloro-1 : 4-benzoquinone, and 2 : 5-di-4^1-chloranilido-3-chloro-6-methyl-1 : 4-benzoquinone. The products dye wool brown shades.

353,580. VULCANISATION ACCELERATORS. Imperial Chemical Industries, Ltd., Millbank, London, H. M. Bunbury, W. J. S. Naunton and W. A. Sexton, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, May 17, 1930.

Products having a " delaying " effect in the vulcanisation of rubber when used with a basic organic accelerator such as diphenylguanidine are obtained by condensing a 2-mercapto-arylene thiazole with a 2-chlorarylene-thiazole to obtain a di-(arylenethiazyl)-monosulphide.

353,970. COLLOIDAL SULPHUR. British Thomson-Houston Co., Ltd., Crown House, Aldwych, London. Assignees of E. W. Nordlander, 19 North Ferry Street, Schenectady, N.Y., U.S.A. International Convention date, May 14, 1929.

Bentonite is mixed with selenium sulphide and heated to 125°-150° C. until the selenium sulphide is fused, and the mass is then cooled and powdered. The powder is suspended in water, the consistency varying from a paste to a colloidal suspension of sulphur.

353,736. FATTY ACID DERIVATIVES. A. Carpmael, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, August 25, 1930. Addition to 340,012.

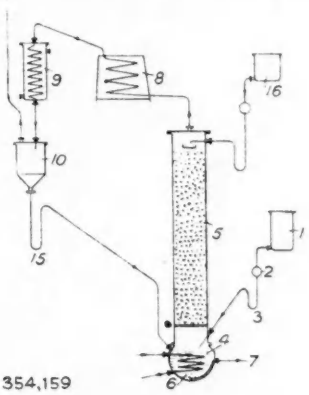
Derivatives of higher fatty acids containing sulphur obtained as in Specifications Nos. 339,675, 340,011-2 (see THE CHEMICAL AGE, Vol. xxiv, pp. 148 and 216) are oxidised to the disulphides and then to sulphonic acids. Halogen atoms and hydroxy groups are not attacked, and the final products may be saturated or unsaturated. Examples are given of the oxidation of the product from hepta-chloro-stearric acid and sodium sulphide with hypochlorite to the disulphide, and then with permanganate to sulphonic acid, and similar oxidations of products from hexachlor-ricinoleic acid, penta-chlorinated stearric acid, and tetrachlorinated oleic acid.

354,138. DYES. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, November 23, 1929. Addition to 316,950 (see THE CHEMICAL AGE, Vol. xxi, p. 337).

An intermediate product of naphthazarin is obtained by reducing 1 : 8 or 1 : 5-dinitronaphthalene, and pouring the solution into water. A sulphuric acid solution of this product is treated with an aliphatic aldehyde yielding a naphthazarin derivative.

354,159. ACETIC ANHYDRIDE. W. W. Groves, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, February 6, 1931.

Glacial acetic acid is treated with acetyl chloride or with a substance which produces it such as thionyl chloride, in the presence of boiling acetic anhydride. The reacting substances may be in liquid or vapour form. A mixture of acetic acid and acetyl chloride passes from vessel 1, directly or through a copper evaporating pipe into the bottom of a



354,159

column 5, preheated by acetic anhydride vapour which is boiled in the bottom of the column by a heating coil 6. Acetic anhydride from the column 5 collects in the lower part 4, and is drawn off at 7, and the gases pass through a reflux condenser 8, and another condenser 9, the condensate being returned to the base of the column 5. Alternatively, the two reactants may be fed from the vessels 1 and 16 in counter current, or a mixture of acetic acid and thionyl chloride may be fed from the vessel 1.

Specifications Accepted with Date of Application

359,772. Derivatives of *o*-anisidine and like *o*-alkyloxy anilines, Manufacture of. Boots Pure Drug Co., Ltd., and R. Child. November 29, 1930.

359,820. Vulcanisation of rubber. Imperial Chemical Industries, Ltd., January 15, 1930.

359,850. Aminoanthraquinone nitriles, Manufacture of. I.G. Farbenindustrie Akt.-Ges. March 1, 1930.

359,865. Disubstituted carbamic acid esters, Manufacture of. F. Hoffmann La Roche & Co. Akt. Ges. January 2, 1931.
359,878. Synthetic manufacture of acetic acid. Nippon Chissohiryo Kabushiki-Kaisha. September 10, 1930.
359,889. Dyes and dyeing. D. A. W. Fairweather, J. Thomas, and Scottish Dyes, Ltd. April 17, 1930.
359,923. Zinciferous material containing cadmium, Treatment of. New Jersey Zinc Co. June 14, 1929.
359,937. Vat dyestuffs. Imperial Chemical Industries, Ltd., C. Shaw, and R. F. Thomson. July 28, 1930.
359,953. Separation of alcohols and phenols from mixtures. A. A. Kaufmann. August 7, 1929.
359,960. Vulcanisation of rubber. Imperial Chemical Industries, Ltd., H. M. Bunbury, W. J. S. Naunton, W. A. Sexton. April 30,1930.
359,962. Mixed fertilisers, Manufacture of. J. Y. Johnson. (*I. G. Farbenindustrie Akt.-Ges.*). May 30, 1930.
359,964. Acetic anhydride, Manufacture of. A. Carpmael. (*I. G. Farbenindustrie Akt.-Ges.*). June 24, 1930.
359,968. Monoazo dyestuffs insoluble in water, Manufacture of—on the fibre. I. G. Farbenindustrie Akt.-Ges. August 3, 1929.
359,989. Sulphates from water-soluble sulphites or bisulphites. J. Y. Johnson. (*I. G. Farbenindustrie Akt.-Ges.*). May 24, 1930.
359,993. Valuable hydrocarbons, Production of—by the destructive hydrogenation of coal suspensions, tars, mineral oils, etc. J. Y. Johnson. (*I. G. Farbenindustrie Akt.-Ges.*). June 2, 1930. Addition to 326,157.
359,994. Purification of crude paraffin oils and the like. J. Y. Johnson. (*I. G. Farbenindustrie Akt.-Ges.*). June 2, 1930. Addition to 315,117.
360,002. Wetting, washing, emulsifying, and dispersing agents, Manufacture of. J. Y. Johnson. (*I. G. Farbenindustrie Akt.-Ges.*). July 21, 1930.
360,027. Heterocyclic compounds, Manufacture of. A. Carpmael. (*I. G. Farbenindustrie Akt.-Ges.*). July 31, 1930.
360,053. Violet dyestuffs of the anthraquinone series, Preparation of. Chemische Fabrik vorm. Sandoz. July 12, 1929.
360,070. Lead oxides, Manufacture of. S. Negishi. August 7, 1930.
360,081. Carbon monoxide and hydrogen from methane, Manufacture of. J. Y. Johnson. (*I. G. Farbenindustrie Akt.-Ges.*). August 11, 1930.
360,098. Hypochlorite solutions, Testing of. Electric Smelting and Aluminium Co. October 22, 1929.
360,102. Condensation product of the anthraquinone series, Manufacture of. A. Carpmael. (*I. G. Farbenindustrie Akt.-Ges.*). September 1, 1930.
360,124. Trisazo dyes and their application, Manufacture of. Imperial Chemical Industries, Ltd. (*E. I. Du Pont de Nemours and Co.*). September 17, 1930.
360,147. Fertilisers, Manufacture of. J. Y. Johnson. (*I. G. Farbenindustrie Akt.-Ges.*). October 2, 1930.
360,148. Decomposition under the action of heat of a mixture of methane or other hydrocarbons and water vapour. F. A. F. Pallemaerts and Union Chimique Belge. October 3, 1930. Addition to 343,172.
360,165. Ammonium sulphate nitrate, Production of. Gewerkschaft Pictor. October 17, 1929.
360,183. Active chlorine, Production of. W. W. Groves (*Chemische Fabrik von Heydon Akt.-Ges.*). October 29, 1930.
360,188. Nitro-β-hydroxy-pyridine and nitro-β-hydroxy-alkyl-pyridines, Manufacture of. I. G. Farbenindustrie Akt.-Ges. November 7, 1929.
360,201. Catalytic hydrogenation of carbonaceous materials, Process for. Standard Oil Development Co. November 20, 1929.
360,215. Compounds of the dibenzo-pyrenequinone series, Manufacture of. I. G. Farbenindustrie Akt.-Ges. November 22, 1929.
360,237 and 360,254. Potassium nitrate, Production of. Kali-Forschungs-Anstalt Ges. December 11, 1929, and April 28, 1930. 360,254 addition to 360,237.
360,266. Trialkoxy derivatives of phenylethylamine, Manufacture of. Soc. of Chemical Industry in Basle. January 8, 1930.
360,293. Acid wool dyestuffs of the anthraquinone series, Manufacture of. I. G. Farbenindustrie Akt.-Ges. February 8, 1930.
360,297. Sulphonic acids, Process for. I. G. Farbenindustrie Akt.-Ges.). February 11, 1930.
360,299. Formic acid, Production of. H. Weitz. February 13, 1931.
360,326-7. Sulphur dioxide and ammonium sulphate, Production of. Verein für Chemische und Metallurgische Produktion. March 26, 1930, and March 28, 1930. 360,327 addition to 360,326.
360,330. Separation of acetic anhydride and acetic acid, Process for. C. F. Boehringer and Soehne Ges. November 27, 1930. Addition to 1742/31.
360,334. Laevo-1-phenyl-2-methylamino-propanol-1, Manufacture of. Knoll Akt.-Ges. Chemische Fabriken, G. Hildebrandt, and W. Klavehn. April 8, 1930.
360,349. 3-Hydroxythionaphthalene-7-carboxylic acid chlorides and carboxylic acids, Manufacture of. I. G. Farbenindustrie Akt.-Ges. May 10, 1930.
360,003. Vapours of the alkali and alkaline earth metals, Preparation of. Associated Electrical Industries, Ltd. June 20, 1929.

Applications for Patents

[In the case of applications for patents under the International Convention, the priority date (that is, the original application date abroad which the applicant desires shall be accorded to the patent) is given in brackets, with the name of the country of origin. Specifications of such applications are open to inspection at the Patent Office on the anniversary of the date given in brackets, whether or not they have been accepted.]

British Celanese, Ltd. Filament manufacture &c. 31228. November 11. (United States, November 18, '30.)
—— Manufacture of artificial materials. 31527. November 13.
Corpmael, A. (*I. G. Farbenindustrie Akt.-Ges.*). Manufacture of acridine derivatives. 31177. November 10. (November 14, '30.)
—— Manufacture of dyestuffs. 31512. November 13.
Chemical Reactions, Ltd. (*Deutsche Gold und Silber Scheideanstalt vorm. Roessler.*) Catalytic hydrogenation of carbonaceous materials. 31263. November 11.
Chemische Fabrik vorm. Sandoz. Manufacture of complex organic derivatives of heavy metals. 31153. November 10. (Germany, November 10, '30.)
Coley, H. E. Production of zinc white. 31451. November 13.
Compagnie Internationale pour la Fabrication des Essences et Pétroles. Treatment of soda-treated tars &c. 31334. November 12. (France, November 14, '30.)
—— Continuous treatment of heavy oils. 31445. November 13. (France, November 14, '30.)
Dehn, F. B. (*Deutsche Hydrierwerke Akt.-Ges.*). Saponification of spermaceti &c. 31514. November 13.
Durand & Huguenin Akt.-Ges. Manufacture of sulphuric acid ester for dying &c. fibres. 31477. November 13. (Germany, November 14, '30.)
Fry, H. D. Filters. 31140. November 10.
Ges. für Teerverwertung, Kraft, F., and Müller, S. Obtaining solid pure naphthalene &c. 31535. November 14.
Haddock, N. H., and Lodge, F. Anthraquinone dyestuffs. 31440. November 13.
Hoffman-La Roche & Co. Akt.-Ges., F. Manufacture of 4-aralkyl-3-keto-3.4-dihydro-1.4-benzoxazines. 31476. November 13. (Germany, April 17.)
I. G. Farbenindustrie Akt.-Ges. Production of rolling-mill products from magnesium &c. 31023. November 9. (Germany, December 16, '30.)
—— Manufacture of 3-methoxy and 3-ethoxy-4-hydroxy-benzaldehyde. 31165. November 10. (Germany, January 26.)
—— Killing insects, and preparations therefor. 31272. November 11. (Germany, November 14, '30.)
—— Projecting lenticular films in colours. 31375. November 12. (Germany, November 13, '30.)
—— Production of aluminium magnesium alloys. 31460. November 13. (Germany, May 23.)
Imperial Chemical Industries, Ltd. Anthraquinone dyestuffs. 31440. November 13.
—— Purification of gases. 31525. November 13.
Johnson, J. Y. (*I. G. Farbenindustrie Akt.-Ges.*). Manufacture of printing and discharge pastes. 31020. November 9.
—— Manufacture of acridine derivatives. 31177. November 10. (November 14, '30.)
—— Johnson, J. Y. Improving properties of waxes. 31227. November 11.
—— Manufacture of dyestuffs. 31512. November 13.
—— Johnson, J. Y. Manufacture of organic compounds. 31576. November 14.
Mentzel, A. Production of alkaline hydrates from alkaline bicarbonate &c. 31250. November 11. (Germany, December 17, '30.)
Ornstein, S. Manufacture of salts of phenyl cinchonic acids. 31522. November 13.
Rheinische Kampfer-Fabrik Ges. Manufacture of cresol ethers alkylated in the nucleus. 31178. November 10. (Germany, November 10, '30.)
Ruhrchemie Akt.-Ges. Fertilisers. 31030. November 9. (Germany, November 8, '30.)
Schuster, M. B. Cracking &c. hydrocarbons. 31515. November 13.
Scott, A. C. Explosives. 31285. November 11.
Silica Gel Corporation. Manufacture of carbon dioxide. 31284. November 11. (United States, November 13, '30.)
Soc. of Chemical Industry in Basle. Manufacture of azo dyestuffs containing chromium. 31374. November 12. (Switzerland, November 14, '30.)
—— Manufacture of dyestuffs. 31478. November 13. (Switzerland. November 15, '30.)
—— Manufacture of azo dyestuffs. 31596. November 14. (Switzerland, November 15, '30.)
Standard Oil Development Co. Removal of low-boiling component from naphtha. 31036. November 9. (United States, November 10, '30.)
Titan Co. Aktieselskap. Titanium compounds. 31078. November 9. (Norway, November 13, '30.)
Wellington, S. N. Means for extracting tars &c. and hydrocarbon vapours from coal gases &c. 30985. November 9.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID, ACETIC, 40% TECH.—£18 15s. per ton d/d address U.K. in casks.

ACID CHROMIC.—11d. per lb., less 2½% d/d U.K.

ACID HYDROCHLORIC.—Spot, 3s. 9d. to 6s. carboy d/d, according to purity, strength and locality.

ACID NITRIC, 80° Tw.—Spot, £20 to £25 per ton makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA (ANHYDROUS).—Spot, 10d. per lb., d/d in cylinders.

AMMONIUM BICHROMATE.—8½d. per lb., d/d U.K.

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.

BLEACHING POWDER, 35/37%.—Spot, £7 19s. per ton d/d station in casks, special terms for contracts.

BORAX, COMMERCIAL.—Crystals, £15 10s. per ton; granulated, £14 10s. per ton; powder, £16 per ton. (Packed in 1 cwt. bags, carriage paid any station in Great Britain. Prices quoted are for one ton lots and upwards.)

CALCIUM CHLORIDE (SOLID), 70/75%.—Spot, £4 15s. to £5 5s. per ton d/d station in drums.

CHROMIUM OXIDE.—9d. to 9½d. per lb. according to quantity d/d U.K.

CHROMETAN.—Crystals, 3¼d. per lb. Liquor, £18 12s. 6d. per ton d/d U.K.

METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 11d. to 2s. 4d. per gall.; pyridinised industrial, 2s. 1d. to 2s. 6d. per gall.; mineralised, 3s. to 3s. 4d. per gall. 64 O.P., 1d. extra in all cases. Prices according to quantity.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE CRYSTALS AND GRANULAR.—4¼d. per lb. net d/d U.K., discount according to quantity; ground ½d. per lb. extra.

POTASSIUM CHLORATE.—3¾d. per lb. ex-wharf, London, in cwt. kegs.

POTASSIUM CHROMATE.—8⅛d. per lb. d/d U.K.

SALAMMONIAC.—First lmp, spot, £40 17s. 6d. per ton d/d address in barrels. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE, UNGROUND.—Spot, £3 10s. per ton d/d station in bulk.

SODA ASH, 58%.—Spot, £6 per ton, f.o.r. in bags, special terms for contracts.

SODA CAUSTIC, SOLID, 76/77° E.—Spot, £14 10s. per ton, d/d station.

SODA CRYSTALS.—Spot, £5 to £5 5s. per ton, d/d station or ex depot in 2-cwt. bags.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE, REFINED.—Spot, £10 10s. per ton d/d station in bags.

SODIUM BICHROMATE CRYSTALS, CAKE, GRANULAR, AND POWDER.—3½d. per lb. net d/d U.K., discount according to quantity. Anhydrous ¾d. per lb. extra.

SODIUM BISULPHITE POWDER, 60/62%.—£16 10s. per ton delivered 1-cwt. iron drums for home trade.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM CHROMATE.—3⅜d. per lb. d/d U.K.

SODIUM NITRITE.—Spot, £19 per ton, d/d station in drums.

SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.

SODIUM SILICATE, 140° Tw.—Spot, £8 5s. per ton, d/d station returnable drums.

SODIUM SULPHATE (GLAUBER SALTS).—Spot, £4 2s. 6d. per ton, d/d.

SODIUM SULPHIDE SOLID, 60/62%.—Spot, £10 5s. per ton, d/d in drums. Crystals—Spot, £8 5s. per ton, d/d in casks.

SODIUM SULPHITE, PEA CRYSTALS.—Spot, £13 10s. per ton; d/d station in kegs. Commercial—Spot, £9 per ton, d/d station in bags.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—5d. to 6¼d. per lb. Crude 60's 1s. 4d. to 1s. 5d. per gall.

ACID CRESYLIC 99/100.—1s. 8d. to 1s. 9d. per gall. B.P., 2s. 6d. to 3s. per gall. Refined, 2s. to 2s. 2d. per gall. Pale, 98%, 1s. 7d. to 1s. 8d. Dark, 1s. 4d. to 1s. 4½d.

ANTHRACENE OIL, STRAINED (GREEN OIL).—4½d. to 4¾d. per gall.

BENZOLE.—Prices at works: Crude, 7d. to 7½d. per gall.; Standard Motor, 1s. 2d. to 1s. 3d. per gall. 90%.—1s. 3d. to 1s. 4d. per gall. Pure, 1s. 6d. to 1s. 7d. per gall.

TOLUOLE.—90%, 2s. per gall. Pure, 2s. 3d. per gall.

XYLOL.—2s. per gall. Pure, 2s. 3d. per gall.

CREOSOTE.—Standard specification, for export, 4¾d. to 5d. net per gall. f.o.b.; for Home, 3¾d. per gall. d/d.

NAPHTHA.—Solvent, 90/160, 1s. 3d. per gall. Solvent, 95/160, 1s. 5d. to 1s. 6d. per gall. Solvent, 90/190, 11d. to 1s. 2d. per gall.

NAPHTHALENE.—Purified Crystals, £11 10s. per ton, in bags.

PITCH.—Medium soft, 70s. per ton, in bulk at makers' works.

PYRIDINE.—90/140, 3s. 6d. to 3s. 9d. per gall. 90/160, 3s. 3d. to 3s. 6d. per gall. 90/180, 1s. 9d. to 2s. 3d. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:—

ACID GAMMA.—Spot, 3s. 3d. per lb. 100% d/d buyer's works.

ACID H.—Spot, 2s. 3d. per lb. 100% d/d buyer's works.

ACID NAPHTHIONIC.—1s. 2d. per lb. 100% d/d buyer's works.

ACID NEVILLE AND WINTHER.—Spot, 2s. 6d. per lb. 100% d/d buyer's works.

ACID SULPHANILIC.—Spot, 8¼d. per lb. 100% d/d buyer's works.

ANILINE OIL.—Spot, 8d. per lb., drums extra, d/d buyer's works.

ANILINE SALTS.—Spot, 8d. per lb. d/d buyer's works, casks free.

BENZALDEHYDE.—Spot, 1s. 6d. per lb., packages extra, d/d buyer's works.

BENZIDINE BASE.—Spot, 2s. 3d. per lb. 100% d/d buyer's works.

o-CRESOL 30/31° C.—£2 6s. 5d. per cwt., in 1-ton lots.

m-CRESOL 98/100%.—2s. 9d. per lb., in ton lots.

p-CRESOL 34.5° C.—1s. 9d. per lb., in ton lots.

DICHLORANILINE.—2s. 5d. per lb.

DIMETHYLANILINE.—Spot, 1s. 6d. per lb., packages extra, d/d buyer's works.

DINITROBENZENE.—7¾d. per lb.

DINITROTOLUENE.—48/50° C., 7d. per lb.; 66/68° C., 7¾d.-8d. per lb.

DIPHENYLAMINE.—Spot, 1s. 8d. per lb., d/d buyer's works.

α-NAPHTHOL.—Spot, 1s. 9d. per lb. d/d buyer's works.

β-NAPHTHOL.—Spot, £65 per ton in 1 ton lots, d/d buyer's works.

α-NAPHTHYLAMINE.—Spot, 10½d. per lb. d/d buyer's works.

β-NAPHTHYLAMINE.—Spot, 2s. 9d. per lb. d/d buyer's works.

o-NITRANILINE.—5s. 11d. per lb.

m-NITRANILINE.—Spot, 2s. 6d. per lb. d/d buyer's works.

p-NITRANILINE.—Spot, 1s. 8d. per lb. d/d buyer's works.

NITROBENZENE.—Spot, 6½d. per lb.; 5-cwt. lots, drums extra, d/d buyers' works.

NITRONAPHTHALENE.—8⅜d. per lb.

SODIUM NAPHTHIONATE.—Spot, 1s. 6d. per lb. 100% d/d buyer's works.

o-TOLUIDINE.—Spot, 9½d. per lb., drums extra, d/d buyer's works.

p-TOLUIDINE.—Spot, 1s. 6d. per lb. d/d buyer's works.

m-XYLIDINE ACETATE.—3s. 3d. per lb., 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £6 10s. per ton. Grey, £11 to £13 per ton. Liquor, 7d. to 9d. per gall.

ACETIC ACID, TECHNICAL, 40%.—£15 15s. per ton.

ACETONE.—£63 to £65 per ton.

AMYL ACETATE, TECHNICAL.—85s. to 95s. per cwt.

CHARCOAL.—£6 10s. per ton, according to grade and locality.

IRON LIQUOR.—24°/30° Tw., 9d. to 1s. 2d. per gall.

METHYL ACETONE, 40/50%.—£43 per ton.

RED LIQUOR.—16° Tw., 7½d. to 9d. per gall.

WOOD CREOSOTE.—9d. to 1s. 6d. per gall., unrefined.

WOOD NAPHTHA, MISCIBLE.—1s. per gall. Solvent, 3s. 6d. to 4s. per gall.

WOOD TAR.—£1 10s. per ton.

BROWN SUGAR OF LEAD.—£30 to £32 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 1d. per lb., according to quality; Crimson, 1s. 3d. to 1s. 5d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 5d. to 1s. 7d. per lb.

BABYTES.—£7 to £8 10s. per ton, according to quality.

CADMIUM SULPHIDE.—3s. 3d. to 3s. 6d. per lb.

CARBON BISULPHIDE.—£26 to £28 per ton, according to quantity; drums extra.

CARBON, BLACK.—3½d. to 4½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£40 to £50 per ton, according to quantity drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.

DIPHENYLGUANIDINE.—2s. 6d. per lb.

INDIARUBBER SUBSTITUTES, WHITE.—4d. to 5½d. per lb.; Dark, 4d. to 4½d. per lb.

LAMP BLACK.—£37 to £40 per ton.

LITHOPONE, 30%.—£20 to £22 per ton.

SULPHUR.—£12 5s. to £15 15s. per ton.

MINERAL RUBBER "RUPRON."—£17.

PIPERIDINE RUBBER ACCELERATORS.—P.P.D., 10s. 6d. to 11s. 6d. per lb.; Z.P.D., 7s. to 7s. 6d. per lb.; L.P.D., 6s. 6d. to 7s. per lb.; P.T.D., 9s. 8d. to 10s. 4d. per lb.; C.P.D., 8s. 3d. to 8s. 10d. per lb.; S.P.D., 8s. 1d. to 8s. 7d. per lb.; Suparac, Standard, 7s. per lb.; Suparac, Z, 3s. 6d. per lb.

SULPHUR CHLORIDE.—4d. to 7d. per lb., according to quality.

SULPHUR PRECIP. B.P.—£55 to £60 per ton, according to quantity.

SULPHUR PRECIP. COMMERCIAL.—£45 to £55 per ton.

VERMILION, PALE OR DEEP.—6s. 8d. to 6s. 10d. per lb.

ZINC SULPHUR.—10d. to 1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

ACETANILIDE.—1s. 5d. per lb.

ACID, ACETIC, PURE, 80%.—£37 5s. per ton d/d address U.K. in casks.

ACID, ACETYL SALICYLIC.—2s. 7d. to 2s. 9d. per lb., according to quantity.

ACID, BENZOIC B.P.—1s. 10d. per lb., for 1-cwt. lots. Solely ex Gum, 1s. 3d. to 1s. 6d. per oz.; 50-oz. lots, 1s. 3d. per oz.

ACID, BORIC B.P.—Crystal, £34 per ton; powder, £35 per ton; For one-ton lots and upwards. Packed in 1-cwt. bags carriage paid any station in Great Britain.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—1s. 0½d. per lb., less 5%.

ACID, GALLIC.—2s. 9d. per lb., for pure crystal, in cwt. lots.

ACID, MOLYBDIC.—5s. to 6s. 3d. per lb. according to quantity. Packages extra.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. for 28-lb. lots; Resublimed, 8s. 6d. per lb. for 28-lb. lots, d/d.

ACID, SALICYLIC, B.P. PULV.—1s. 5d. to 1s. 8d. per lb. Technical.—1s. to 1s. 2d. per lb.

ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.

ACID, TARTARIC.—1s. 0½d. per lb., less 5%.

AMIDOL.—7s. 6d. to 11s. 3d. per lb., according to quantity.

AMMONIUM BENZOATE.—3s. 6d. per lb.

AMMONIUM CARBONATE B.P.—£36 per ton. Powder, £39 per ton in 5-cwt. casks. Resublimated, 1s. per lb.

AMMONIUM MOLYBDATE.—5s. to 6s. 3d. per lb. according to quantity. Packages extra.

ATROPHINE SULPHATE.—7s. to 7s. 6d. per oz., according to quantity.

BARBITONE.—5s. 9d. to 6s. per lb.

BENZONAPHTHOL.—2s. 10d. per lb.

BISMUTH CARBONATE.—7s. 9d. per lb.

BISMUTH CITRATE.—9s. 2d. per lb.

BISMUTH SALICYLATE.—7s. 9d. per lb.

BISMUTH SUBNITRATE.—6s. 6d. per lb.

BISMUTH NITRATE.—Cryst. 5s. 1d. per lb.

BISMUTH OXIDE.—11s. 1d. per lb.

BISMUTH SUBCHLORIDE.—10s. 9d. per lb.

BISMUTH SUBGALLATE.—7s. 4d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth sales respectively.

BISMUTHI ET AMMON LIQUOR.—Cit. B.P. in W.Qts. 1s. 2d. per lb.; 6 W. Qts. 11½d. per lb.; 12 W. Qts. 10d. per lb.; 36 W. Qts. 9½d. per lb. Liquor Bismuth B.P., in W. Qts., 1s. 2d. per lb.; 6 W. Qts., 11½d. per lb.; 12 W. Qts. 10d. per lb.; 36 W. Qts., 9½d. per lb.

BORAX B.P.—Crystal, £23 10s. per ton; powder, £24 per ton; for one-ton lots and upwards. Packed in 1-cwt. bags carriage paid any station in Great Britain.

BROMIDES, B.P.—Ammonium, 1s. 8d. per lb.; potassium, 1s. 5d. per lb.; granular, 1s. 5d. per lb.; sodium, 1s. 7d. per lb. Prices for 1-cwt. lots.

CAFFEIN, PURE.—6s. 6d. per lb.

CAFFEIN CITRAS.—5s. per lb.

CALCIUM LACTATE.—B.P., 1s. 1½d. to 1s. 3d. per lb., according to quantity.

CAMPHOR.—Refined flowers, 3s. 2d. to 3s. 4d. per lb., transparent tablets, 3s. 5d. to 3s. 7d., according to quantity; also special contract prices.

CHLORAL HYDRATE.—2s. 11½d. to 3s. 1½d. per lb.

CHLOROFORM.—2s. 4d. per lb.

ETHERS.—S.G. .730—1s. 1d. to 1s. 2d. per lb., according to quantity; other gravities at proportionate prices.

FORMALDEHYDE, 40%.—30s. per cwt. in barrels, ex wharf.

GLUCOSE, MEDICINAL.—1s. 6d. to 2s. per lb. for large quantities.

HEXAMINE.—1s. 10d. to 2s. per lb., according to quantity.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 3s. per gall.

HYDROQUINONE.—4s. 7d. per lb. in 1-lb. lots; 3s. 5½d. per lb. in cwt. lots.

HYPOPHOSPHITES.—Calcium, 2s. 11d. to 3s. 4d. per lb.; potassium, 3s. 2d. to 3s. 7d. per lb.; sodium, 3s. 1d. to 3s. 6d. per lb.; for 28-lb. lots.

IRON AMMONIUM CITRATE.—B.P., 1s. 9d. per lb. for 28-lb. lots. Green, 2s. 6d. per lb., list price. U.S.P., 2s. 7d. per lb. list price.

IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.

IRON QUININE CITRATE.—B.P., 8¼d. to 8¾d. per oz.

MAGNESIUM CARBONATE.—Light B.P., 36s. per cwt.

MAGNESIUM OXIDE.—Light Commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.

MENTHOL.—A.B.R. recrystallised B.P., 15s. 9d. per lb. net; Synthetic, 8s. 6d. to 12s. per lb.; Synthetic detached crystals, 8s. 6d. to 9s. 9d. per lb., according to quantity; Liquid (95%), 8s. per lb.

MERCURIALS B.P.—Up to 1-cwt. lots, Red Oxide, crystals, 7s. 7d. to 7s. 8d. per lb., levig, 7s. 1d. to 7s. 2d. per lb.; Corrosive Sublimate, Lump, 5s. 5d. to 5s. 6d. per lb., Powder, 5s. 1d. to 5s. 2d. per lb.; White Precipitate, Lump, 6s. 1d. to 6s. 2d. per lb.; Powder, 6s. 3d. to 6s. 4d. per lb.; Calomel, 6s. 3d. to 6s. 4d. per lb.; Yellow Oxide, 6s. 11d. to 7s. per lb.; Persulph, B.P.C., 6s. 1d. to 6s. 2d. per lb.; Sulph. nig., 5s. 7d. to 5s. 8d. per lb. Special prices for larger quantities.

METYL SALICYLATE.—1s. 4½d. to 1s. 6½d. per lb.

PARAFORMALDEHYDE.—1s. 6d. per lb.

PARALDEHYDE.—1s. 1d. per lb.

PHENACETIN.—4s. to 4s. 3d. per lb.

PHENOLPHTHALEIN.—4s. 4d. to 4s. 6d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—90s. per cwt., less 2½ per cent.

POTASSIUM CITRATE.—B.P., 1s. 7d. per lb. for 28-lb. lots.

POTASSIUM FERRICYANIDE.—1s. 7½d. per lb., in 125-lb. kegs.

POTASSIUM IODIDE.—B.P., 21s. 4d. to 24s. 4d. per lb., as to quantity.

POTASSIUM METABISULPHITE.—50s. per cwt. d/d London, kegs free.

POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.

QUININE SULPHATE.—2s. 2d. per oz. for 1,000-oz. lots.

SACCHARIN.—43s. 6d. per lb.

SALICIN.—16s. 6d. to 17s. 6d. per lb., according to quantity.

SILVER NITRATE.—10d. per oz. for 500-oz. lots, sticks, 2d. per oz. extra.

SODIUM BARBITONUM.—8s. 6d. to 9s. per lb. for 1-cwt. lots.

SODIUM BENZOATE B.P.—1s. 7d. per lb.

SODIUM CITRATE.—B.P.C. 1911, 1s. 4d. per lb. B.P.C. 1923, and U.S.P., 1s. 8d. per lb., for 28-lb. lots.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—73s. per cwt. net. Crystals, 2s. 6d. per cwt. extra.

SODIUM SALICYLATE.—Powder, 1s. 10d. to 2s. 2d. per lb. Crystal, 1s. 11d. to 2s. 3d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.

SODIUM SULPHITE, ANHYDROUS.—£26 to £28 per ton, according to quantity. Delivered U.K.

STRYCHNINE, ALKALOID CRYSTAL, 2s. per oz.; hydrochloride, 1s. 9½d. per oz.; nitrate, 1s. 8d. per oz.; sulphate, 1s. 9d. per oz., for 1,000-oz. quantities.

TARTAR EMETIC, B.P.—Crystal or powder, 1s. 9d. to 2s. per lb.

THYMOL.—Puriss, 6s. 1½d. to 7s. per lb., according to quantity. Natural, 12s. per lb.

ZINC STEARATE.—1s. 4d. to 1s. 6d. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.

AUBEPINE (EX ANETHOL).—8s. 9d. per lb.

AMYL ACETATE.—2s. 3d. per lb.

AMYL BUTYRATE.—4s. 9d. per lb.

AMYL CINNAMIC ALDEHYDE.—9s. per lb.

AMYL SALICYLATE.—2s. 9d. per lb.

ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—3s. per lb.

BENZYL ACETATE FROM CHLORINE-FREE ALCOHOL.—1s. 9d. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—1s. 10d. per lb.

BENZYL BENZOATE.—2s. 2d. per lb.

CINNAMIC ALDEHYDE NATURAL.—12s. 6d. per lb.

COUMARIN.—13s. per lb.

CITRONELLOL.—9s. per lb.

CITRAL.—6s. per lb.

ETHYL CINNAMATE.—8s. per lb.

ETHYL PHTHALATE.—2s. 6d. per lb.

EUGENOL.—7s. 6d. per lb.

GERANIOL.—7s. 3d. to 12s. per lb.

GERANIOL (FROM PALMAROSA).—17s. per lb.

HELIOTROPINE.—6s. per lb.

ISO EUGENOL.—9s. 6d. per lb.

LINALOL (EX BOIS DE ROSE).—5s. 6d. per lb.

LINALYL ACETATE, EX BOIS DE ROSE.—7s. 6d. per lb. Ex Shui Oil, 7s. 6d. per lb.

METHY ANTHRANILATE.—7s. per lb.

METHYL BENZOATE.—4s. 3d. per lb.

MUSE XYLOL.—6s. 6d. per lb.

PHENYL ETHYL ACETATE.—10s. per lb.

PHENYL ETHYL ALCOHOL.—8s. 6d. per lb.

RHODINOL.—40s. per lb.

SAFROL.—2s. per lb.

VANILLIN, EX CLOVE OIL.—16s. to 18s. per lb. Ex Guaiacol.—14s. 3d. to 16s. 3d. per lb.

Essential Oils

ANISE OIL.—2s. 6d. per lb.

BERGAMOT OIL.—10s. per lb.

CAMPHOR OIL.—White, 105s. per cwt.

CANANGA.—Java, 7s. per lb.

CASSIA, 80/85%.—4s. per lb.

CINNAMON OIL LEAF.—4s. per oz.

CITRONELLA OIL.—Java, 2s. 8d. per lb., c.i.f. Pure Ceylon, 2s. per lb.

CLOVE OIL, 90/92%.—5s. 6d. per lb.

EUCALYPTUS OIL, AUSTRALIAN, B.P. 70/75%.—1s. 4d. per lb.

LAVENDER OIL.—Mont Blanc, 38/40%, 10s. per lb.

LEMON OIL.—4s. 6d. per lb.

ORANGE, SWEET.—8s. per lb.

PALMA ROSA.—9s. per lb.

PEPPERMINT.—Wayne County 9s. per lb., Japanese 5s. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, November 18, 1931.

THE demand for various chemicals has been fairly brisk with prices very firm.

ACETONE.—Is very firm at £62 per ton and in good demand.

ACID, ACETIC.—Continues firm at £36 5s. to £38 5s. per ton for Technical 80%, and Pure 80% at £37 5s. to £39 5s. per ton, with a good daily demand.

ACID, CITRIC.—Is rather quiet at about 1s. 0½d. per lb. less 5%.

ACID, FORMIC.—Continues very firm at £46 48 per ton and in somewhat short supply.

ACID, OXALIC.—Firm and in good request at £42/43 per ton.

ALUMINA SULPHATE.—Firm at £8 10s. to £9 10s. per ton.

ARSENIC.—Cornish maternal is in very short supply with the price nominal at £26 per ton f.o.r. mines. Imported material is on offer at about £23 c.i.f.

CHLORIDE OF BARIUM.—Firm at about £11 per ton.

CREAM OF TARTAR.—Firm at 80s. 6d. to 80s. 6d. per cwt. less 2½%.

FORMALDEHYDE.—Continues very firm at £27 28 per ton.

LEAD ACETATE.—Is in good demand at £37 39 per ton for White, and Brown at £1 per ton less.

LITHOPONE.—Firm at about £22 per ton.

BICHROMATE OF POTASH.—In steady request at 4¼d. per lb.

POTASH CHLORATE.—In active demand at £32 34 per ton, supplies short.

PERMANGANATE OF POTASH.—Needle crystals B.P., 7d. per lb. with a steady demand.

POTASH PRUSSIATE.—About 8½d. per lb. with a good steady demand.

SODIUM BICHROMATE.—In very good demand at 3½d. per lb. The position is very firm.

Coal Tar Products

THE prices of coal tar products remain unchanged from last week, although the market shows a little more activity. Production, however, still remains slow.

MOTOR BENZOL.—Remains at about 1s. 4½d. to 1s. 5½d. per gallon f.o.r.

SOLVENT NAPHTHA.—Quoted at about 1s. 1½d. to 1s. 2d. per gallon f.o.r.

HEAVY NAPHTHA.—Obtainable at about 11d. to 1d. 0½d. per gallon f.o.r.

CREOSOTE OIL.—Unchanged at about 3d. to 3½d. per gallon f.o.r. in the North, and at about 4d. to 4½d. per gallon in London.

CRESYLIC ACID.—Quoted at about 1s. 6d. per gallon f.o.r. for the 98/100% quality, and at about 1s. 4d. per gallon for the Dark quality 95/97%.

NAPHTHALENES.—Remain at about £2 5s. to £2 10s. per ton for the firelighter quality, at about £2 15s. to £3 per ton for the 74 76 quality, and at about £4 per ton for the 76 78 quality.

PITCH.—Remains at about 60s. to 65s. per ton, f.o.b. East Coast port.

Latest Oil Prices

LONDON, November 18.—LINSEED OIL was easy. Spot, ex mill, £18 5s.; November, £15 10s.; December, £15 15s.; January-April, £16 15s.; May-August, £17 15s., naked. RAPE OIL was inactive. Crude extracted, £30 10s.; technical refined, £32 10s., naked, ex wharf. COTTON OIL was quiet. Egyptian, crude, £22 10s.; refined common edible, £26 10s.; deodorised, £28 10s., naked, ex mill. TURPENTINE was quiet. American, spot, 48s.; January-April, 49s. 3d. per cwt.

HULL.—LINSEED OIL, spot to December, closed at £17; January-April at £17 2s. 6d.; May-August at £18, naked. COTTON OIL.—Egyptian, crude, spot, £21; edible, refined, spot, £24; technical, spot, £24; deodorised, £26, naked. PALM KERNEL OIL, crude, naked, f.m.q., spot, £24 10s. GROUNDNUT OIL, crushed extracted, spot, £30 10s.; deodorised, £34 10s. SOYA OIL, crushed extracted, spot, £20 10s.; deodorised, £24. RAPE OIL, crushed extracted, spot, £29 10s.; refined, £31 10s. per ton. COD OIL, 16s. 6d. per cwt. TURPENTINE, American, spot, 50s. per cwt. CASTOR OIL, pharmacy, spot, 48s. 6d.; firsts, 43s. 6d.; seconds, 41s. 6d. per cwt.

Nitrogen Fertilisers

SULPHATE OF AMMONIA.—*Export.*—During the week no large business is reported and the market remains unchanged at £5 5s. per ton f.o.b. U.K. port in single bags. *Home.*—Prices in the home market remain unchanged and as usual during this yeason of the year purchases are small. It is understood that merchants and farmers are reserving tonnages for spring delivery.

IMPORTED NITRATE OF SODA.—The price for this product remains unchanged. It is reported that the imports during the month of October were about 8,800 tons, but it is expected that this material will not be sold until the spring.

BRITISH NITRATE OF SODA.—As this material is being sold at the same prices as the imported product it is anticipated that many consumers will avail themselves of the opportunity to "Buy British."

NITRO-CHALK.—It is understood that merchants and farmers are still purchasing their spring requirements and the price of £7 5s. per ton, delivered, remains in force.

South Wales By-Products

THERE is very little change in South Wales by-product activities. The call for most products at the moment is slow and sporadic, and it is unlikely that there will be any marked improvement this year unless the heavy industries improve. An early protective move will assure this as far as the steel, ship-repairing, etc., industries are concerned, so that in the event of an early protective move there should be a sharp forward move in Welsh by-product activities. There is a fair call for pitch, principally from patent fuel makers, with values unchanged. Road tar has only a moderate call round about 13s. per 40-gallon barrel delivered. Refined tars are also only in moderate demand, with values for coke-oven and gasworks tar unchanged. Naphthas are slow, solvent having only a small call, while heavy has practically no call. Patent fuel exports are a little better, a remark which also applies to coke. Patent fuel prices for export are:—19s. to 19s. 6d., ex-ship Cardiff; 18s. to 18s. 6d., ex-ship Swansea. Coke prices are:—Best foundry, 32s. 6d. to 36s. 6d.; good foundry, 22s. 6d. to 25s.; and furnace, 16s. to 17s. 6d.

Scottish Coal Tar Products

WHILE orders are not so numerous as they were a few weeks ago distillers are taking a long view of the market, and in some cases, notably refined tar and pitch, quotations are very firm. Cresylic acid remains uninteresting although a rise is not considered to be unlikely.

CRESYLIC ACID.—Quotations are irregular with supplies quite plentiful. Pale, 99/100 per cent., 1s. 5d. to 1s. 6d. per gallon; pale, 97/99 per cent., 1s. 3d. to 1s. 4d. per gallon; dark, 97/99 per cent., 1s. 2d. to 1s. 3d. per gallon; all ex works. High Boiling Acid is quieter but value remains at 2s. 9d. to 3s. 3d. per gallon.

CARBOLIC SIXTIES.—Supplies for prompt are well looked after and many inquiries are now in circulation for delivery over 1932. To-day's value is 1s. 6½d. to 1s. 7½d. per gallon according to quality.

CREOSOTE OIL.—Some fair sized contracts have been placed at current values. Specification oils, 2½d. to 3d. per gallon; washed oil, 3¼d. to 3½d. per gallon; gas works ordinary, 3½d. to 3⅞d. per gallon; all in bulk quantities f.o.r. works.

COAL TAR PITCH.—The market is short of supplies and home value is not under 60s. per ton ex makers' works. The export value is nominal at 57s. 6d. to 62s. 6d. per ton f.o.b. Glasgow.

BLAST FURNACE PITCH.—The demand is increasing and, as there is no production at present, orders are being fulfilled from stock. Controlled prices are 40s. per ton f.o.r. works, and 45s. per ton f.a.s. Glasgow for export.

REFINED COAL TAR.—The position is improving from the manufacturer's point of view. Quotations are firmer at about 4d. per gallon in buyers' packages at makers' works.

BLAST FURNACE TAR is nominal at 2⅞d. per gallon f.o.r.

WATER WHITE PRODUCTS.—Business is disappointing and values are easy accordingly. Motor Benzole, 1s. 3½d. to 1s. 4½d. per gallon; 90/160 Solvent, 1s. 2½d. to 1s. 3½d. per gallon; and 90/190 Heavy Solvent, 1s. 0½d. to 1s. 1½d. per gallon; all in bulk, ex works.

New Nitrogen Plant in Hungary

THE nitrogen plant of the Ungarische Ammonia-fabrik A. G., is expected to be put into operation in November, 1932. The company was formed in November, 1930, with the participation of the Salgotarjaner Steinkohlen Bergbau A. G., the Pester Kommerzialbank, and the Ungarische Excompte und Wechslerbank A.G. The plant, which will have a capacity of 22 tons of ammonia daily, is located in Pet, near Varpalota, County of Veszprem. The raw material to be used in the works will be chiefly lignite from a colliery of the Salgotarjaner concern in Varpalota.

Beeswax Imports into Canada

IMPORTS of beeswax into Canada in 1930 aggregated 223,000 lb., and 244,600 lb. in 1929. France was the leading source, furnishing 136,100 lb. in 1930, while the United States furnished 41,900 lb. Purchases of beeswax from the United Kingdom increased from 4,800 lb. in 1929 to 40,500 lb. in 1930.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Chas. Tennant and Co., Ltd., Glasgow, and may be accepted as representing this firm's independent and impartial opinions.*

Glasgow, November 19, 1931.

THE Scottish heavy chemical market business has steadied considerably, general business being slightly better than last week.

ACETONE.—B.G.S.—£61 to £63 per ton, ex wharf, according to quantity.

ACID, ACETIC.—Prices ruling are as follows: glacial, 98/100%, £47 to £58 per ton; pure, £37 5s. per ton; technical, 80%, £36 5s., delivered in minimum lots of 1 ton.

ACID, BORIC.—Granulated commercial, £25 per ton; crystals, £26 per ton; B.P. crystals, £34 per ton; B.P. powder, £35 per ton, in 1-cwt. bags, delivered Great Britain free in one-ton lots upwards.

ACID, HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy. Dearsenicated quality, 5s. per carboy, ex works, full wagon loads.

ACID, NITRIC, 80° QUALITY.—£23 per ton, ex station, full truck loads.

ACID, OXALIC.—98/100%.—On offer at £42 to £43 per ton, ex store.

ACID, SULPHURIC.—£3 7s. 6d. per ton, ex works, for 144° quality. £5 15s. per ton for 168°. Dearsenicated quality, 20s. per ton extra.

ACID, TARTARIC, B.P. CRYSTALS.—Quoted 1s. to 1s. 0½d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE.—Quoted round about £8 10s. per ton, ex store.

ALUM, LUMP POTASH.—Now quoted £8 10s. per ton, c.i.f. U.K. ports. Crystal meal, about 2s. 6d. per ton less.

AMMONIA ANHYDROUS.—Quoted 10½d. per lb., containers extra and returnable.

AMMONIA CARBONATE.—Lump quality quoted £36 per ton. Powdered, £38 per ton, packed in 5 cwt. casks, delivered U.K. stations or f.o.b. U.K. ports.

AMMONIA LIQUID, 80°.—Unchanged at about 2½d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £21 to £22 per ton, ex station.

ANTIMONY OXIDE.—Spot material obtainable at round about £36 per ton, ex wharf.

ARSENIC, WHITE POWDERED.—Quoted £25 10s. per ton, ex wharf. Spot material still on offer at £26 per ton, ex store.

BARIUM CHLORIDE.—In good demand and price about £10 10s. to £11 10s. per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—British manufacturers' contract price to consumers unchanged at £6 15s. per ton, delivered in minimum 4-ton lots.

CALCIUM CHLORIDE.—Remains unchanged. British manufacturers' price, £4 15s. to £5 5s. per ton, according to quantity and point of delivery.

COPPERAS, GREEN.—At about £3 15s. per ton, f.o.r works, or £4 12s. 6d. per ton, fo.b. U.K. ports.

FORMALDEHYDE, 40%.—Now quoted £29 per ton, ex store.

GLAUBER SALTS.—English material quoted £4 10s. per ton, ex station.

LEAD, RED.—Price now £30 per ton, delivered buyer's works.

LEAD, WHITE.—Quoted £40 per ton, carriage paid.

LEAD ACETATE.—White crystals quoted round about £35 to £36 per ton c.i.f. U.K. ports. Brown on offer at about £1 jer ton less.

MAGNESITE, GROUND CALCINED.—Quoted £9 10s. per ton, ex store.

METHYLATED SPIRIT.—Industrial quality 64 o.p., quoted 2s. per gallon, less 2½% delivered.

POTASSIUM BICHROMATE.—Quoted 4¼d. per lb., delivered U.K. or c.i.f. Irish ports, with an allowance for contracts.

POTASSIUM CARBONATE.—Spot material on offer, £27 per ton ex store.

POTASSIUM CHLORATE.—99¾/100% Powder.—Quoted £34 per ton ex store; crystals 30s. per ton extra.

POTASSIUM NITRATE.—Refined granulated quality quoted £20 17s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton ex store.

POTASSIUJ PERMANGANATE B.P. CRYSTALS.—Quoted 6½d. per lb. ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Spot material quoted 8d. per lb., ex store.

SODA, CAUSTIC.—Powdered 98/99%, £17 10s. per ton in drums, £18 15s. in casks. Solid 76/77%, £14 10s. per ton in drums, £14 12s. 6d. per ton for 70/72% in drums; all carriage paid buyer's station, minimum four-toun lots; for contracts 10s. per ton less.

SODIUM BICARBONATE.—Refined recrystallised, £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3½d. per lb., delivered buyer's premises, with concession for contracts.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, 7s. 6d. per ton extra. Light soda ash, £7 13s. per ton, ex quay, minimum four-ton lots, with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 2s. 6d. per ton, ex station, minimum four-ton lots. Pea crystals on offer at £15 per ton, ex station, minimum four-ton lots.

SODIUM NITRATE.—Price not yet fixed.

SODIUM PRUSSIATE.—Quoted 5¼d. per lb., ex store. On offer at 5d. per lb., ex wharf to come forward.

SODIUM SULPHATE (SALTCAKE).—Price, 60s. per ton, ex works; 65s. per ton, delivered, for unground quality. Ground quality 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices for home consumption: solid 61/62%, £10 per ton; broken, 60/62%, £11 per ton; crystals 30/32%, £8 2s. 6d. per ton, delivered buyer's works on contract, minimum four-ton lots. Special prices for some consumers. Spot material 5s. per ton extra.

SULPHUR.—Flowers, £13 per ton; roll, £11 10s. per ton; rock, £10 5s. per ton; ground American, £9 10s. per ton, ex store.

ZINC CHLORIDE 98%.—British material now offered at round about £18 10s. per ton, f.o.b. U.K. ports.

ZINC SULPHATE.—Quoted £11 per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Boiler Plant Efficiency

THE October issue of *Concord,* the organ of the Liverpool Borax Co., Ltd., of Maxwell House, St. Paul's Square, Liverpool, contains some useful information for those concerned with the maintenance and efficient working of boiler plant. Among the subjects covered are boiler explosions, erosion in low pressure blading, condensing plant, boiler feed water, boiler inspections, and the Algor colloidal treatment for feed water. Priming is an evil that has been dealt with successfully by Algor treatment in conjunction with attention to advice as to working conditions. The advantages of purer steam are obvious when it is used for process work; it is also important where the steam is used for power. When priming is excessive, it constitutes a danger to the cylinder of an engine. As an illustration of an unexpected benefit, cases have been known where the adoption of Algor treatment has led to a reduction in the oil bill. Another indirect benefit is illustrated by the case of a Lancashire boiler in which there was a considerable amount of hard scale, and which had been working for a long time under conditions liable to cause at least slight overheating; when leakages were observed from furnace flanges, the boiler was opened out for examination, and it was found that the leakages were due to serious fractures which had been previously hidden under the hard scale, the loosening of which had disclosed the defects. As a matter of fact, the boiler had been well within the danger zone., and it is possible that the timely use of Algor prevented a calamity.

Yeast Research at Mellon Institute

DR. EDWARD R. WEIDLEIN, Director of the Mellon Institute of Industrial Research, Pittsburgh, has announced that the institution has accepted from the National Grain Yeast Corporation, Bellville, N.J., a grant for a comprehensive investigation of the chemistry and technology of yeast. This research, which will be operated as an Industrial Fellowship of the Institute, will be conducted with the close collaboration of specialists in the donor's organisation; and the results will be made available as the various stages of the studies are completed.

According to the announcement, this investigation will be especially beneficial to food products manufacturers who are important users of yeast; the facilities of the Institute will be applied through the Fellowship to various problems in the production and utilisation of yeast, looking toward the improvement of present-day practices and products. W. Roy Irvin, a food and nutritional chemist, has been appointed to the incumbency of the Fellowship. He has been a Fellow ot Mellon Institute since 1917, following the completion of his professional graduate work at the University at Kansas, and has contributed valuably to the literature of bread and baking technology and cereal products.

Manchester Chemical Market

[From Our Own Correspondent.]

Manchester, November 18, 1931.

Business on the chemical market has proceeded on moderate lines during the past week, although conditions have been patchy, some sellers reporting rather quiet conditions. This, however, seems to be largely due to the fact that in imported materials especially, many buyers in late-September and early October contracted for fairly large quantities for forward delivery. Specifications against these commitments are not unsatisfactory and altogether the quantities going into consumption locally are on an improved scale compared with a couple of months ago. Meanwhile, values are steady and further advances will probably be seen shortly in view of the Government's "dumping" pronouncement this week.

Heavy Chemicals

Bicarbonate of soda is well held on the basis of £10 10s. per ton, and a quietly steady call for this material is reported. Caustic soda, also, is fairly active and contract quotations are firm at from £12 15s. to £14 per ton, according to quality. The demand for chlorate of soda this week has been on somewhat quiet lines, with values in the neighbourhood of £31 per ton. Saltcake is in moderate request at from £2 17s. 6d. to £3 per ton. A quiet business is going through in the case of hyposulphite of soda, values of which are maintained at from £15 to £15 10s. per ton for the photographic material and about £9 for the commercial. Prussiate of soda meets with a moderate volume of inquiry and quotations are very firm at from 4¾d. to 5¼d. per lb., according to quantity. The demand for bichromate of soda is on a fair scale and at round 3½d. per lb. prices in this section are firm. Contract offers of alkali are well held at from £6 per ton and a quietly steady movement of this material is reported. There has been little alteration in the position of sulphide of sodium; inquiry is on a moderate scale and the price position is undoubtedly strong, the 60-65 per cent. concentrated solid quality being on offer at from £10 10s. to £11 per ton and the commercial product at about £8.

The tendency in pretty well all sections of the potash market is towards higher levels. A quiet trade is passing in the case of bichromate, which is on offer at round 5½d. per lb. Carbonate of potash is in fair request at £29 per ton, with caustic at round £39. Permanganate of potash is moving off in limited quantities, with the B.P. grade quoted at about 6½d. per lb. and the commercial at 6¼d. With regard to yellow prussiate, this keeps up at round 8½d. per lb. and moderate buying interest is being displayed. Chlorate of potash is steady at about £34 per ton, but no great weight of business has been reported in respect of this material during the past week.

A moderate export demand for sulphate of copper is being experienced, with current offers at about £18 10s. per ton, f.o.b. Arsenic continues very firm, with white powdered, Cornish makes, on the scarce side at from £26 to £26 10s. per ton, at the mines. Trade in the lead products has not been very active but quotations are firm in sympathy with the metal, nitrate being at about £29 per ton and acetate at £35 for the white material and £34 for the brown. The demand of the acetates of lime is no more active than before; the brown grade is on offer at about £7 5s. per ton and the grey at £11.

Acids and Tar Products

Citric acid is a firm market at from 1s. 1½d. to 1s. 2d. per lb., and moderate sales are being made. Tartaric acid, at about 1s. 0¾d. per lb., is in a similar position. Oxalic acid is steady at from £2 3s. to £2 4s. per cwt., ex store. There has been no further price change in the position of acetic acid, business in which during the past week has been on a fair scale; the commercial 80 per cent. material is quoted at £38 5s. per ton and the glacial at £51.

Buying interest in pitch has been less active at about 62s. 6d. per ton, f.o.b., there has been no pronounced change in values. Creosote oil keeps up at from 3½d. to 4½d. per gallon, naked, but not much important buying is going on. Solvent naphtha continues firm at from 1s. 3½d. to 1s. 4d. per gallon, naked, with moderate sales reported. Crude carbolic acid is at 1s. 6½d. to 1s. 7d. per gallon, and crystals at up to 6d. per lb.

Company News

A. B. Fleming and Co., Ltd.—An interim dividend of 5 per cent. actual, less tax, is announced in respect of the year ended April 30 next.

Eastman Kodak Co.—The regular dividend of $1.25 and an extra of $0.75 per share are announced on the common stock, payable on January 2.

International Nickel Co. of Canada, Ltd.—It is announced that the directors have reduced the annual dividend rate on the common stock from 40 to 20 cents per share by declaring a quarterly dividend of 5 cents.

Langdale's Chemical Manure Co.—A debit balance of £2,438 was brought in, from which is deducted the profit of £1,159 for the year ended September 30, leaving a debit balance to be carried forward of £1,278.

International Bitumen Emulsions, Ltd.—The report for the year ended March 31 last, shows a net profit of £7,115. After deducting debit amount brought forward, there is a credit balance of £5,641.

Amalgamated Zinc (de Bavay's).—The income for the half year to June 30 last, was £6,831, against £11,556 in the previous six months. The net profit amounted to £3,497. Since the close of the half-year a dividend of 2½ per cent. has been paid.

Zinc Manufacturing Co., Ltd.—The accounts for the year to June 30 last show a trading loss of £19,035, which goes against a trading loss of £38,857 in the period from April 19, 1929, to June 30, 1930. The total loss, after charging £20,081 for depreciation, is £68,240, making a debit to carry forward of £115,424.

Lewis Berger and Sons.—In the year to July 31 last the net profit fell from £106,634 to £30,978, and a balance of £65,541 was brought in. After payment of the dividend on the preference shares there remains a balance of £68,519, which the directors propose to carry forward. The dividend on the ordinary shares for 1929-30 was 10 per cent.

Weardale Lead Co.—The report for the year ended September 30, 1931, states that there was a loss of £11,019. After writing down property, plant and machinery account by £3,455, and bringing into credit income from investments and balance from last year's accounts, there remains a deficit of £8,462. The balance of reserve for taxation has been transferred to reserve fund for general purposes, which now stands at £14,582.

New British Standard Specification for Portland Cement

The British Engineering Standards Association has issued a revised edition of the British Standard Specification for Portland cement, which was last revised in 1925. The new specication contains a number of modifications amongst which may be noted the elimination of the 28 day test for cement and sand mortar, the 3 and 7 days tests only being specified; the introduction of a new method for ascertaining the quantity of water to be used for gauging for the tensile strength (cement and sand mortar), setting time and soundness tests; the reduction of the time of boiling in the test for soundness from 6 hours to 3 hours, and the inclusion of a stipulation as to the weight of cement in bags, wooden casks or steel drums. This last stipulation is not, however, to become operative until January 1, 1933, so as to enable existing stocks to be used up. The tensile test on neat cement is no longer an obligatory test of the specification, but for those who wish to use it, it is given in an appendix as an optional test. Copies of this Specification (B.S.S. No. 12-1931) may be obtained from the Publications Department, British Engineering Standards Association, 28 Victoria Street, London, S.W.1, price 2s. 2d., post free.

Dyestuff Manufacturers' Discussion

Meetings have been held during the last few days between the Continental dye manufacturers and Imperial Chemical Industries at which substantial progress has been made towards the conclusion of a general agreement in regard to dyestuffs.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

EGYPTIAN OIL AND CAKE MILLS, LTD., London, E.C. (M., 21/11/31.) Registered November 4, by order on terms, mortgage further securing current accounts up to £E.25,000, to Barclays Bank (Dominion, Colonial and Overseas) and £E25,000, to Ottoman Bank; charged on property at Alexandria, etc. *Nil. January 5, 1931.

ENGLISH PLASTICS, LTD., Slough. (M., 21/11/31.) Registered November 7, £500 debentures, to Mrs. M. R. Molony, The Cleeve, St. Helens, Hastings; general charge.

LANDON'S GRANULATED FERTILISER CO., LTD., London, E.C. (M., 21/11/31.) Registered November 4, debentures, to Barclays Bank, Ltd. securing all moneys due or to become due to the bank; general charge. *£8,400. April 4, 1930.

PARENT COAL CARBONISATION TRUST, LTD., London, E.C. (M., 21/11/31.) Registered November 4, £10,000 prior lien debentures (ranking in priority to £60,000 debentures); general charge. *Nil. September 2, 1930.

SPIES PETROLEUM CO., LTD., London, E.C. (M., 21/11/31.) Registered November 2, charge, to Westminster Bank, Ltd., securing £300 and all other moneys due or to become due to the bank; charged on company's interest in any distribution to be made in the liquidation of Beecham Trust, Ltd. *Nil. January 12, 1931.

London Gazette, &c.

Company Winding Up Voluntarily

HARANOX CHEMICAL CO., LTD. (C.W.U.V., 21/11/31.) By special resolution, November 10. Mr. Sam Mortimer Sutcliffe, 2 Grosvenor Mansions, Buxton, appointed liquidator.

Company Winding Up

PETROLEUM REFINERIES, LTD. (C.W.U., 21/11/31.) Statutory meetings at Carey Street, London, W.C.2, November 27; creditors at 2.30 p.m. and contributories at 3 p.m.

New Companies Registered

AMORA SUPPLY CO., LTD. Registered November 12. Nominal Capital £100 in £1 shares. Manufacturers, compounders, refiners and distillers of and dealers in flavouring and other essences, essential oils, perfumes, colouring and sweetening agents and extracts, etc. A subscriber: R. Nield, Heath House, Letchmore Heath, near Watford.

COLORANE, LTD. 61 Chancery Lane, London, W.C.2.—Registered November 10. Nominal capital £1,000 in £1 shares. To acquire a chemical process for securing colouring matter from the earth, owned by H. J. de Wergifosse, of 48 rue de la Luzerne,: Brussels. Directors: H. J. de Wergifosse, 48 rue de la Luzerne, Brussels, E. Regout.

YULE, HEPWORTH, LTD. Registered November 12. Nominal capital £2,000 in £1 shares. General mechanical engineers, consulting or inspecting engineers, analytical chemists, etc. Directors: F. Hepworth, 194 Waterloo Road, South Yardley, Birmingham, Mrs. E. M. Hepworth, L. R. Pratt.

New Chemical Trade Marks

These lists are specially compiled for us from official sources by Gee and Co., Patent and Trade Mark Agents, Staple House, 51 and 52 Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to December 11, 1931.

TURPINITE.

526,000. Class 1.—Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. Thornton and Ross, Ltd., Spring Gate Works, Colne Vale Road, Milnsbridge, Huddersfield; chemical manufacturers.—September 29, 1931.

COMESTALAC.

526,238. Class 1.—Paints, varnishes, and enamels (in the nature of paint). Merry and Minton, Ltd., Westminster Works, West Heath, Northfield, Birmingham; manufacturers.—October 8, 1931.

DETEL.

526,351. Class 1.—Paints, varnishes, enamels (in the nature of paints), and anti-corrosives. Francis Clifford Dyche Teague, 258 Gloucester Terrace, London, W.2; research chemist.—October 13, 1931.

PROSTIGMIN.

526,424. Class 3. Chemical substances prepared for use in medicine and pharmacy. The Hoffmann-La Roche Chemical Works, Ltd., The "Roche" Laboratories, 51 Bowes Road, London, N.13; manufacturing chemists.—October 16, 1931.

Tariff Changes

HUNGARY.—A DECREE (No. 5620/M.E. of October 17) provides that carbon disulphide (Tariff No. 447), destined exclusively for use in vineyards may, until further notice, be imported into Hungary free of duty under permit from the Minister of Finance in conjunction with the Minister of Agriculture.

YUGOSLAVIA.—A Ministerial Decision, effective as from October 28, provides that butyl alcohol and its compounds are to be exempt from Customs duty on importation in Yugoslavia until such time as butyl alcohol be manufactured in that country in adequate quantities. The exemption from duty is subject to the fulfilment of certain conditions, particulars of which are available at the Department of Overseas Trade, 35 Old Queen Street, London, S.W.1.

Chemical Trade Inquiries

These inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35 Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country) except where otherwise stated.

UNITED KINGDOM.—Newton Abbot Rural District Council invites tenders for the supply, during the 12 months ending March 31, 1933, of refined tar, bituminous compounds, etc. Details are available from the Surveyor, Mr. Stanley Oliver, Kylemore, 38 Keyberry Park, Newton Abbot, and tenders on the forms provided have to be delivered at the Municipal Offices, 64 East Street, Newton Abbot, not later than November 28.

FINLAND.—An agent in Helsingfors desires to obtain the representation of British manufacturers of Venetian reds. (Ref. No. 525).

ROUMANIA.—The Roumanian State Railways Administration is calling for tenders, to be presented in Roumania by December 18, 1931, for the supply of 140,000 kg. of zinc white, 18,000 kg. of iron minium and 30,000 kg. of lead minium (first quality). (Ref. B.X. 7193).